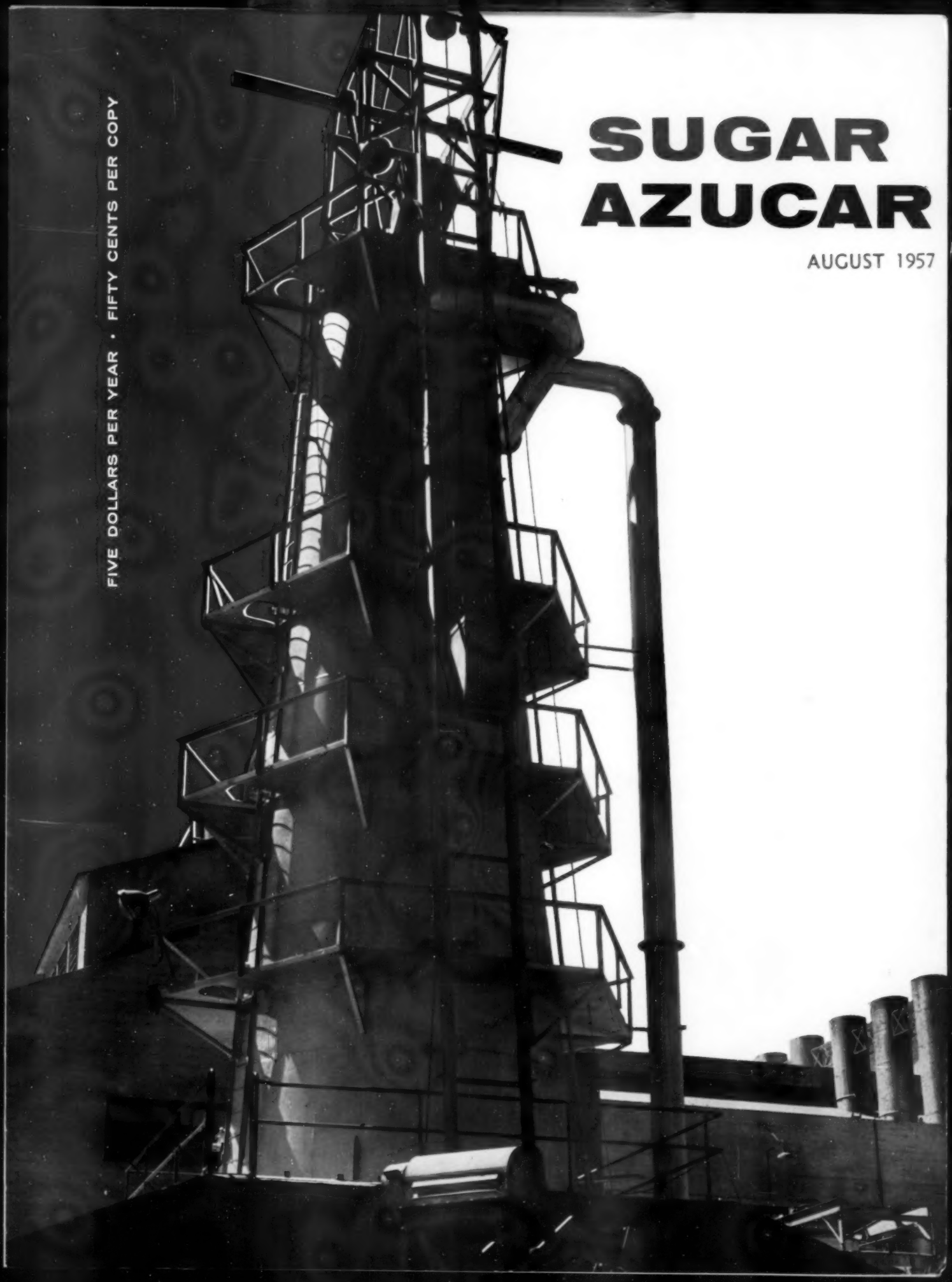
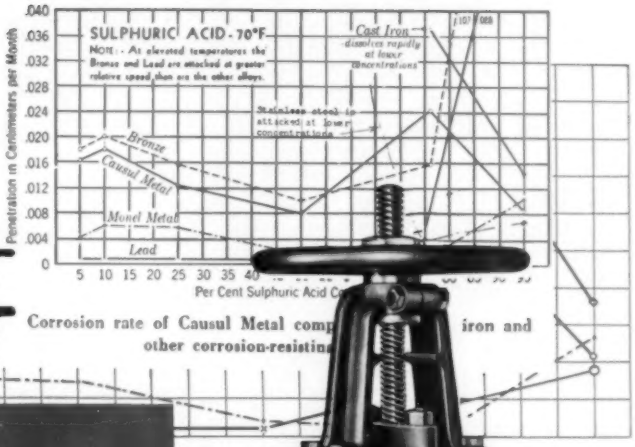
SUGAR
AZUCAR

AUGUST 1957

FIVE DOLLARS PER YEAR · FIFTY CENTS PER COPY



GET BALANCED CORROSION-RESISTANCE



Corrosion rate of Causul Metal comp iron and other corrosion-resistin

with money-saving "CAUSUL" METAL VALVES

"Causul" Metal Valves are designed for season-after-season of maintenance-free service on raw juice lines. They not only resist the corrosive and abrasive action of raw juices, but withstand caustic soda and other corrosive solutions used to clean the line, as well. They are far less expensive than high-alloy valves, but resist corrosion much better than cast iron or bronze. Available in Type 316 Stainless Steel or Monel Metal trim for the best corrosion-resistance obtainable.

NOW WITH HEAVIER, STRONGER BODIES!

"Causul" Metal Valves are now made with heavier, thicker body walls for extra strength and durability. Castings are poured in a foundry specializing in handling this alloy.

NOW IN A GREATER RANGE OF SIZES!

"Causul" Metal Valves are now made in a complete size range — ½ to 2 inch, screwed ends . . . 1 to 8 inch, flanged ends — with both Monel and Stainless Steel trims.

Screwed Ends
Fig. 2008-8 (Monel trim)
Fig. 2008-4 (Stainless trim)
½ to 2 inches

Flanged Ends
Fig. 2009-8 (Monel trim)
Fig. 2009-4 (Stainless trim)
1 to 1½ inches
2 to 3 inches—Two-Bolt Bonnet Design

Flanged Ends
Fig. 2009-8 (Monel trim)
Fig. 2009-4 (Stainless trim)
4 to 8 inches

LUNKENHEIMER QUALITY

"CAUSUL" METAL is an exclusive Lunkenheimer development — containing iron, nickel, copper, chromium, and molybdenum. For detailed service recommendations, request a Confidential Service Information Form from your Lunkenheimer Distributor, or write to The Lunkenheimer Company, Box 360, Cincinnati 14, Ohio.

BRONZE • IRON
STEEL • PVC VALVES

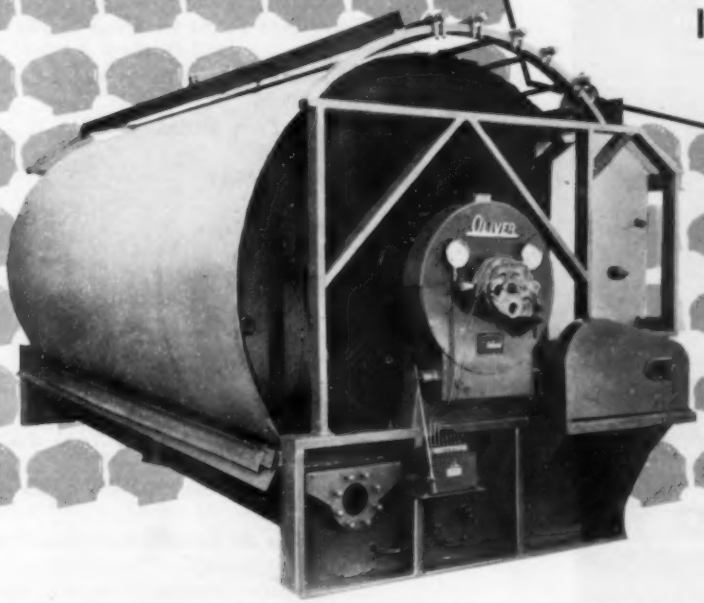
LUNKENHEIMER®

THE ONE *Great* NAME IN VALVES

L-355-11E

"Every 12 Days for 25 Years...

an Oliver Campbell* Filter to the World's Cane Sugar Industry..."



During the past *25 years* Dorr-Oliver has supplied 775 Oliver-Campbell Filters to the world's cane sugar industry — an average rate of *one every 12 days.*

Today every Oliver-Campbell Filter made is guaranteed by a quarter century experience in design, engineering, manufacture, *and performance* represented by more than *775 units* in every sugar producing area of the world.

Typically, in 1956, 28 O-C Filters have been purchased by sugar factories in Barbados, Cuba, Dominican Republic, Ecuador, Hawaii, India, Mauritius, Mexico, Peru and Puerto Rico — demonstrating the industry's continuing reliance on this experience.

*Oliver-Campbell — T.M. Dorr-Oliver Incorporated, Reg. U.S. Pat. Off.

DORR-OLIVER
INCORPORATED
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT
STAMFORD • CONNECTICUT • U.S.A.

Sugar y Azucar for Aug., 1957. Volume 52. No. 8. Published monthly by Russell Palmer Trust, Mona Palmer, Publisher. Publication Office, 109 Market Pl., Baltimore, Md. Editorial and executive office, 604 Fifth Avenue, New York 20, N. Y. Accepted as controlled circulation publication at Baltimore, Md.

both bagging speed and weighing accuracy with Richardson SUGAR SCALES

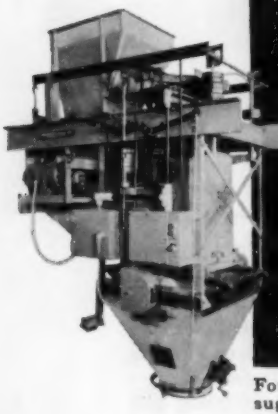
It's a simple matter to assure yourself of fast, accurate sugar weighing—add an automatic Richardson Bagging and Weighing Scale to your production line. It makes sense . . . and dollars, too . . . to use scales designed *specifically* for handling your product. The close weighing tolerances you require are achieved without the loss of bagging speed so necessary to profitable operation.

For economically handling sugar—raw or refined—the special features built into a Richardson sugar scale provide you with long-lasting, dependable service. Here are the units for the job.

For handling refined sugar—
The Model FFF Automatic Bagging Scale

ACCURATE TO ONE OUNCE PER 100# BAG
UP TO TEN 100# BAGS PER MINUTE

- exclusive screened dribble-reserve hopper for uniform feed—in spite of occasional lumps
- automatic radial feed gate—leakproof and fast acting
- automatic or manual discharge
- even arm, 1 to 1 balance beam for consistent accuracy
- stainless steel construction



For handling raw sugar—in bulk or to sacks—
The Model J39 Automatic Belt Feed Raw Sugar Scale

ACCURATE TO ¼ TO ½ OF 1%
UP TO THREE 325# WEIGHINGS PER MINUTE AND FASTER ON 100# AND 250# BAGS
(Available in Kilos)

- stainless steel hoppers prevent corrosion
- air operated catch gate provides accurate cut-off at head pulley
- electrically interlocked discharge doors stop overweighings
- Cablegrip bag holder facilitates bagging.

For large capacity bulk raw sugar handling and remote counters, indicators and printers to meet the most rigid specifications — contact Richardson.

Richardson
MATERIALS HANDLING BY WEIGHT SINCE 1902

RICHARDSON SCALE COMPANY, Clifton, New Jersey

Atlanta • Boston • Buffalo • Chicago • Cincinnati • Detroit • Houston
Memphis • Minneapolis • New York • Omaha • Philadelphia
Pittsburgh • San Francisco • Wichita • Montreal • Toronto • Havana
Mexico City • San Juan • Geneva, Switzerland • Nottingham, England

VOLUME 52, NO. 8
AUGUST, 1957

SUGAR y

CONTENTS

21 Continuous Filtration of First Carbonation Juice

23 The Twenty-Four Hour Cane Harvest

24 Heavy Duty Trucks for Severe Service

25 Diffusion of Sugar from Shredded Cane

26 Personal Press Station

27 Human Relations

28 Facts About Sugar

32 Abstracts of the World's Sugar Literature

COVER: *This month Charles Kroger, industrial artist, selects a striking detail from the North American sugar scene for the front cover: a tower for the preparation of lime used in the adjacent beet factory epitomizes modern, economic techniques in the beet sugar industry.*

PUBLISHER, Mona Palmer

Editor, E. W. Mayo, Jr.

Editor Spanish Section, Jose M. Pena

Advertising Manager, R. E. Slimermeyer

EDITORIAL and Executive Office
604 Fifth Avenue
New York 20, N. Y.
Tel.: JUdson 6-4820

EUROPEAN OFFICE:
G. L. Fetherstonhaugh
St. Paul's Corner
Ludgate Hill, London EC 4
Tel. CITY 5318

AZUCAR

Including El Mundo Azucarero

CONTENIDO

41 Filtración Continua de Jugos de Primera Carbonatación

43 Recolección de Caña a Base de Veinticuatro Horas

44 Difusión de Azúcar de Caña Desfibrada

48 Envase de Azúcar a Razón de 150 Sacos por Minuto

57 Extractos de Publicaciones Azucareras

64 Informe Anual del Consejo Internacional Azucarero

64 Concesión de Licencias para la Fabricación de Ésteres de Azúcar

CUBIERTA: *Este mes, Charles Kroger, artista industrial, seleccionó un interesante detalle de la escena azucarera norteamericana para la cubierta de esta edición: una torre para la preparación de cal empleado en la fábrica de azúcar de remolacha adyacente, como epítome de la técnica económica moderna seguida en la industria de azúcar de remolacha.*

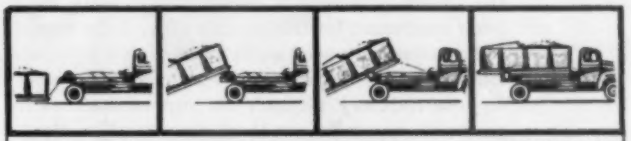
NRP BFA

PUERTO RICO:
Arturo Riollano
P. O. Box 553
Isabella
Puerto Rico

Copyright 1957, Mona Palmer, Trustee. Successor to Facts About Sugar and the Planter & Sugar Manufacturer. Contents of previous issues can be found by consulting the Agricultural Index Service or the Engineering Index Service. Subscription may be paid the London office at £1-15-0 per year; single copies 3/6. Published Monthly. Subscription price $5.00 per year; single copies 50 cents.

COMO EL CAMION SISTEMA FWD CAMPO ACARREA MAS CAÑA . . . AHORRA MAS DINERO

¡Usted no puede acarrear tanta caña en tan corto tiempo por ningún otro medio. Ningún otro sistema le ahorra tanto dinero!



cable asegurado — se levanta la cama — automáticamente — en posición final

¡TODO EN MENOS DE UN MINUTO!

COMPRE AHORA PARA ESTA TEMPORADA

ARGENTINA
Igarreta Hnos., Sarmiento 1358, Buenos Aires
BOLIVIA
Bolsa del Auto, Casilla 2239, La Paz
CHILE
Petrowitsch, Errázuriz y Cía., Casilla 3812, Santiago
Suc. M. Hernández F., Casilla 493, Punta Arenas
COLOMBIA
Retec Ltda., Apt. Aéreo 11, Cali y
Apt. Aéreo 6665, Bogotá
CUBA
Cía. Agro Mecánica Industrial, CAMPALVA, S. A.,
Km. 7 — Doble Vía Rancho Boyeros, Capdavila, Habana
ECUADOR
Sr. Gonzalo Yepez Teran, Box 3078, Quito
HAWAII
Honolulu Iron Works, Box 3140, Honolulu
MEXICO
Maquinaria Universal S. A. Balderas 36-502, Mexico City
NICARAGUA
J. Cardenal h. y R. Lacayo Fiallos, Cía. Ltda.
Apt. 621, Managua
PANAMA
Panamá Electric & Machinery Co., Apt. 1432, Panamá, R. P
PARAGUAY
La Vencedora, S. A., Casilla 247, Asunción
PERU
Importadora Nor-Sur S. A., Avenida Wilson 1032-36, Lima
PHILIPPINE ISLANDS
Philippine Engineering Co., 936 Roan Street, Quiapo, Manila
URUGUAY
General Machinery Co., Ave. Gral. Rondeau 1804, Montevideo
VENEZUELA
Compania Anonima Materiels Y. Equipos de Ferrocarrile
Apt. 3985, Caracas

Vea a su distribuidor o escríbanos inmediatamente en solicitud de circulares sobre el Sistema FWD Campo

FWD

THE FOUR WHEEL DRIVE AUTO COMPANY
Clintonville, Wisconsin, U. S. A

Reproducido de SUGAR y AZUCAR

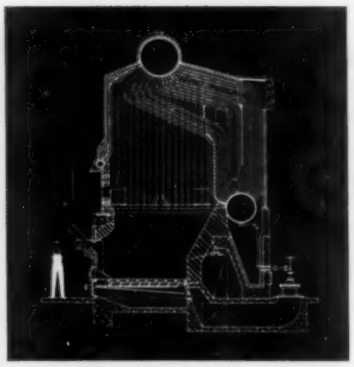
Steam

FOR THE SUGAR INDUSTRY

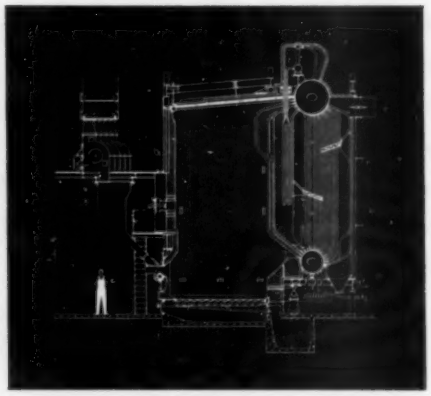
Combustion Engineering offers sugar mills a complete line of steam generating units equipped with stokers especially designed to burn bagasse better than can be done by any other method.

Such boilers, with a total capacity of more than 5,000,000 pounds of steam per hour, have been purchased for this service around the world.

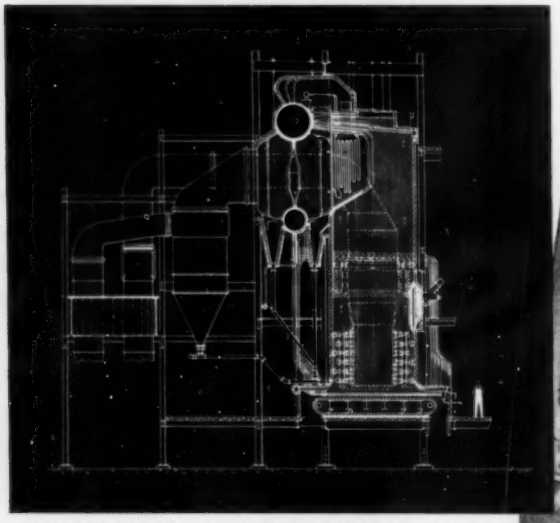
So—when you need equipment of this type buy from C-E, the company with extensive experience in your industry. Consult our representatives in your area, or our Export Department in New York.



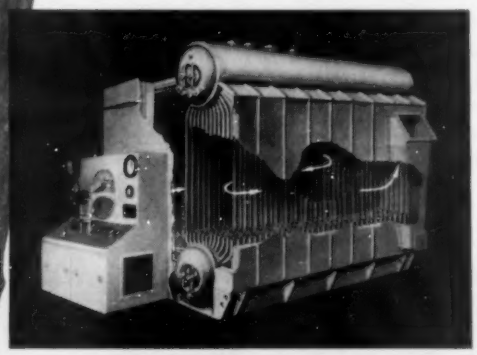
C-E Vertical-Unit Boiler, Type VU-10, equipped with C-E Bagasse Burning Stoker (Dump Grate Type). Units of this design are suitable for steam capacities up to about 45,000 pounds of steam per hour.



C-E Vertical Unit Boiler, Type VU-50, equipped with C-E Bagasse Burning Stoker (Dump Grate Type). This design is suitable for steam capacity requirements up to about 125,000 pounds of steam per hour.



C-E Vertical-Unit Boiler, Type VU-40, equipped with C-E High-Set Bagasse Stokers with continuous discharge traveling grate; tangential, auxiliary oil burners and tangential air admission are also employed. Especially suitable for steam requirements above 125,000 pounds of steam per hour.



C-E Package Boiler, Type VP. This oil or gas fired unit is especially suited for off-season and auxiliary steam needs. It is a complete, compact, shop-assembled boiler—simple and economical to install, operate and maintain.

Associates, licensees and representatives throughout the free world

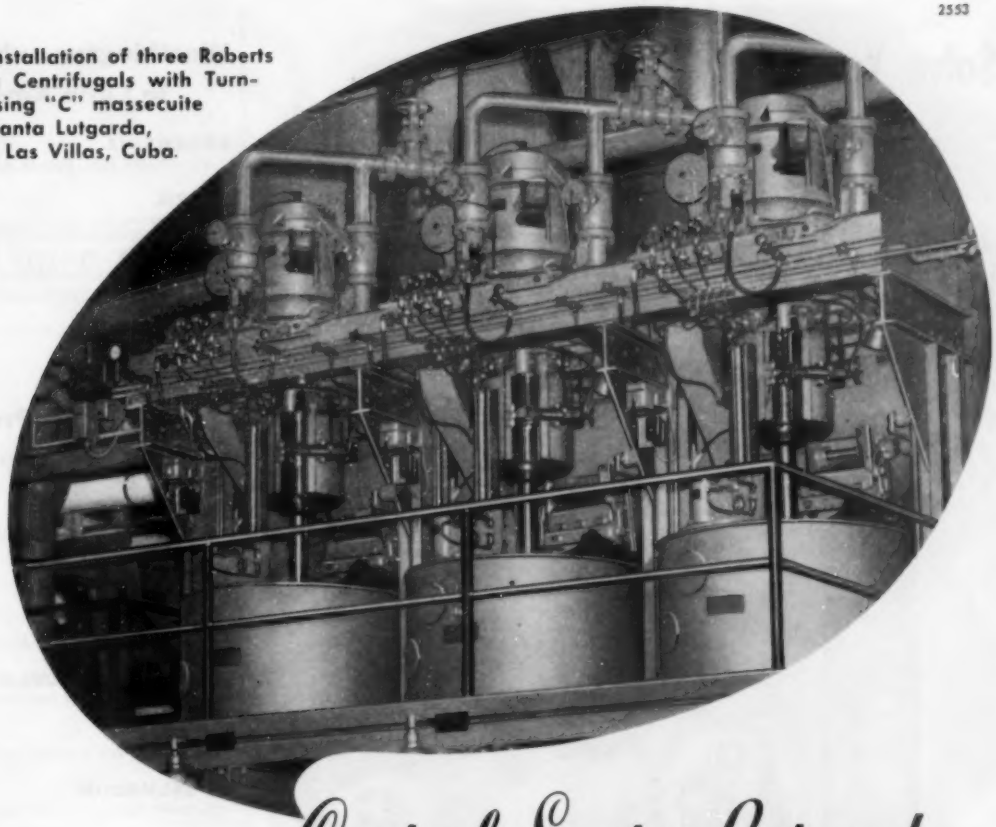
COMBUSTION ENGINEERING

8-977

Combustion Engineering Building • 200 Madison Avenue, New York 16, N.Y.

2553

A notable installation of three Roberts Water Drive Centrifugals with Turntork, processing "C" massecuite at Central Santa Lutgarda, Province de Las Villas, Cuba.



Central Santa Lutgarda

INSTALLS THE WATER DRIVE WITH A PLUS

. . . and the plus is *TURNTORK*, with a 3 H. P. motor which is independent of the spinning power. It provides constant speed, with ample torque to plow the toughest sugar.

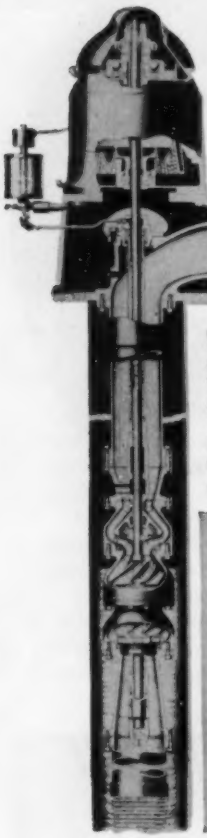
Don't struggle with inadequate plowing power! Stop the waste of water motor plowing. It can use up to twenty times as much power as Turntork, and still the basket can stall.

If your situation indicates water drive centrifugals,
FOLLOW CENTRAL SANTA LUTGARDA'S EXAMPLE
and get all these features, too!

1. Independent water motor, separable from head.
2. Overspeed governor.
3. Pilot operated nozzles.
4. Pressure lubrication.
5. Separable basket spindle.
6. Any degree of automatic operation.

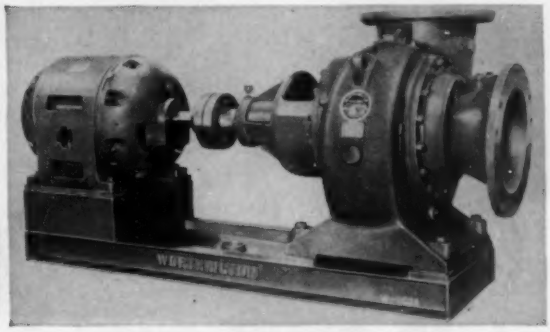
ROBERTS STEVENS
The
WESTERN STATES
MACHINE COMPANY
HAMILTON, OHIO, U.S.A.

Solve Your Irrigation or Drainage Problem with Worthington Specialized Equipment

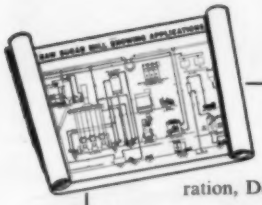


Vertical Turbine Pumps — newly designed, most complete line of vertical turbine pumps. High performance, simplicity, reliability, efficiency and top quality. Sizes range from 6" up; capacities from 50 to 3000 U.S. gpm. Water or oil lubrication.

Worthington Centrifugal Pumps — Types L and M — for applications requiring large capacities of water against wide range of operating heads. Sizes from 8" to 84" discharge and capacities from 1500 to 225,000 U.S. gpm. Most pumps available in several different styles, such as horizontal, vertical, dry pit or wet pit, horizontal or bottom suction, closed or open impellers, clockwise or counterclockwise rotation.



Self-Priming Centrifugals — portable, multi-purpose gasoline-engine or motor driven pump. Self contained. For capacities up to 500 U.S. gpm, total heads up to 110′ in standard sizes 1½" to 2". Ideal for such applications as irrigation, drainage, de-watering, sump service, etc.



FREE! . . . 2-color, diagrammatic flow chart showing typical applications of Worthington equipment in a sugar mill. For your copy, or for information on sugar mill equipment, write to Worthington Corporation, Department O.C., Harrison, N. J., U. S. A.

WORTHINGTON

The sign of value around the world

Worthington subsidiaries in Latin America

ARGENTINA
Worthington Ltd., Buenos Aires

BRAZIL
Worthington S.A. (Maquinas), Rio de Janeiro

COLOMBIA
Worthington Limitada, Bogota

MEXICO
Worthington de Mexico, S.A., Mexico, D. F.

Engineered Products Distributors

BOLIVIA
Macdonald & Co., (Bolivia) S.A., La Paz

CHILE
Foram Chilena, Santiago

CUBA
Agencia Macfarlane, S.A., Havana

DOMINICAN REPUBLIC
F. A. Ortiz & Co., San Juan (Puerto Rico)

ECUADOR
Cia. General de Comercio y Mandato, Guayaquil

EL SALVADOR
Quinonez Hermanos, S.A., San Salvador

GUATEMALA
Emilio Selle, Guatemala City

HAITI
Rene & Roger Armand, Port-au-Prince

HONDURAS
Compania Jeffress & Brant, Tegucigalpa

JAMAICA
Masterton, Ltd., Kingston

NICARAGUA
Casa Comercial McGregor, S.A., Managua

PARAGUAY
Interpar, S.A., Asuncion

PERU
A. y F. Wiese, Lima
Cia. Importadora Exportadora Nacional, S.A., Lima

PUERTO RICO
F. A. Ortiz & Co., San Juan

SURINAM
J. F. D. Haenen Co., Ltd., Paramaribo (Netherlands Guiana)

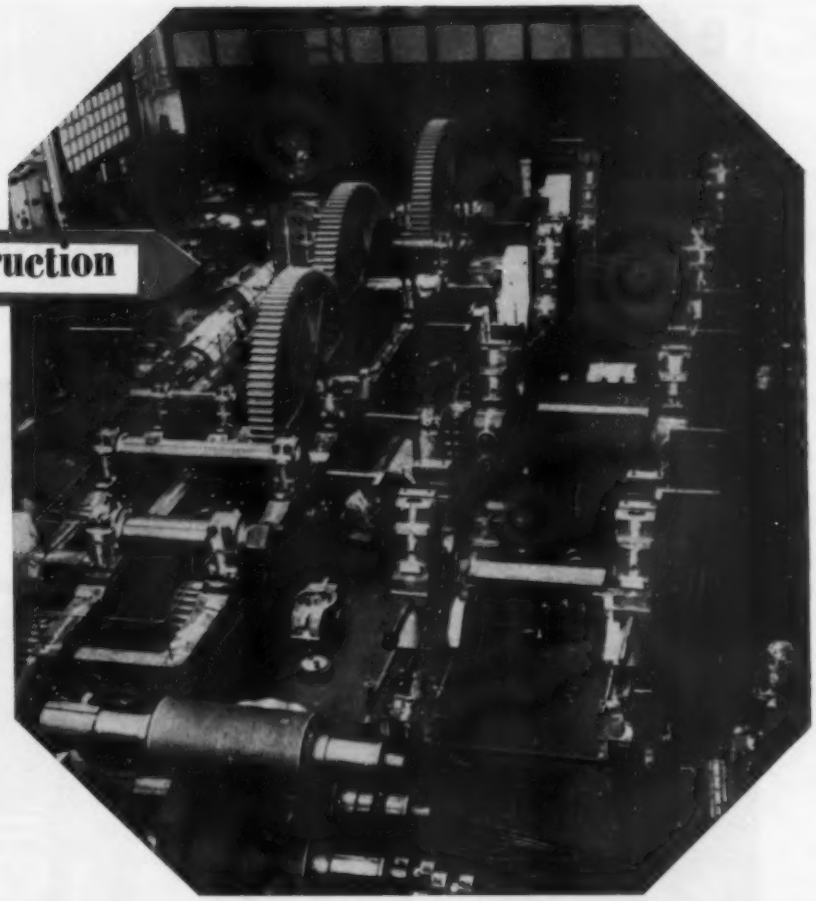
TRINIDAD
J. N. Harriman & Co., Ltd., Port-of-Spain

URUGUAY
Horacio Torrendell, S.A., Montevideo

VENEZUELA
Mata Sifontes, S.A., Caracas
CUTISA, Maracaibo

VIRGIN ISLANDS
F. A. Ortiz & Co., San Juan (Puerto Rico)

Under Construction



View in one of our erecting shops showing the 31" x 60" Twelve Roller Turbine Driven Milling Plant under construction for the complete Cane Sugar Factory (crushing 1000/1500 tons per day) at present in hand for "Thakurgaon", Pakistan.

SMITH

CANE SUGAR

Machinery

A. & W. SMITH & CO. LTD.

SUGAR FACTORY AND REFINERY ENGINEERS

21 MINCING LANE, LONDON, E.C. 3

Cable Address: "SUGRENGINE LONDON"

Works: 120 TRADESTON STREET, GLASGOW, C.5.

COMPLETE SUGAR FACTORIES • EXTENSIONS • RENEWALS

BROADBENT CENTRIFUGALS

make

HIGH PRODUCTION

easier!

PART OF THE NEW BATTERY OF BROADBENT CENTRIFUGALS AT SEZELA DURBAN

the most successful sugar factory centrifugal in the world

The new BROADBENT 'FUGALS are constantly breaking output records, and are proving exceptionally reliable under diverse sugar factory conditions because of their simple basic construction and sound manufacture.

The labour saving finger tip operation and automatic process control combine to give rapid economical production of uniform high quality sugar.

Write for Publication No. S/5507/2500.

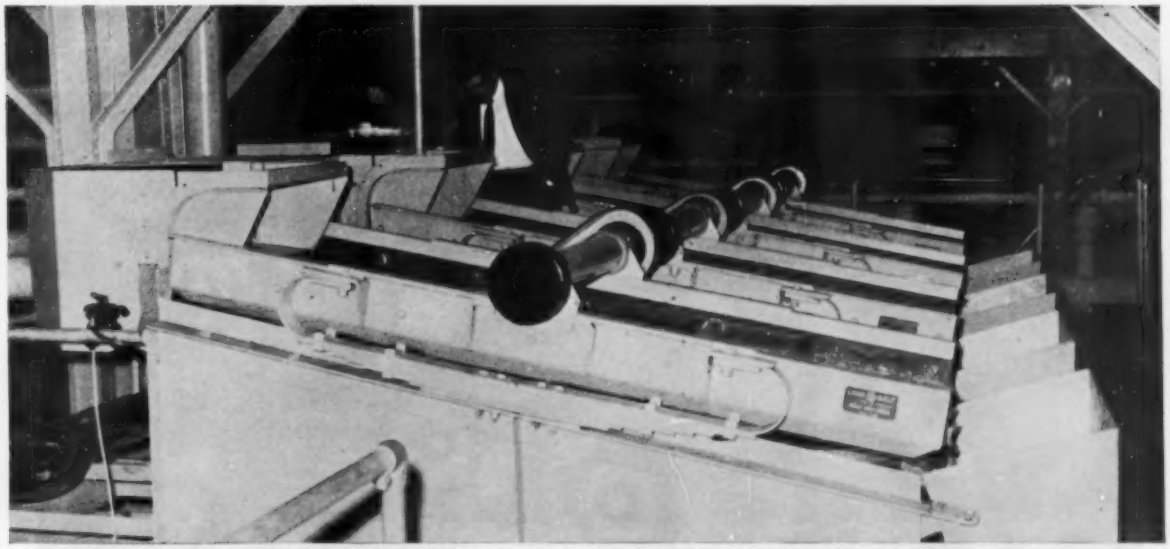
Represented in all sugar producing areas

THOMAS BROADBENT & SONS LTD.

TELEPHONE: 3520 (6 lines)
TELEGRAMS: BROADBENT, HUDDERSFIELD.

HUDDERSFIELD ENGLAND
ESTABLISHED 1864

CABLES: BROADBENT, HUDDERSFIELD
CODES: ALL MODERN CODES



THIS BATTERY OF FOUR Link-Belt liquid vibrating screens provides high-capacity screening of primary sugar juices and bagasse at a Cuban Central. Equipped with 20-mesh cloth, the screens handle a total of 800 gallons per minute of juice and bagasse. Juice goes to process, while bagasse discharges to a Link-Belt screw conveyor and is fed back to the mills.

Primary screening to final refining . . . modern mills

choose LINK-BELT liquid screens

High-frequency vibration with small amplitude assures high efficiency, less cloth clogging

SUGAR mills the world over find that it costs less to screen cane juices cleanly and effectively with Link-Belt liquid vibrating screens. That's why this modern, highly efficient method is fast becoming the preferred choice for fine separation of raw mill, secondary and hot clarified juices.

Link-Belt features include high-frequency vibration with small amplitude plus other refinements which promote maximum passage of liquid with minimum cloth blinding. Equally important, amplitude of Link-Belt liquid vibrating screens can be easily adjusted in the field to suit varying densities.

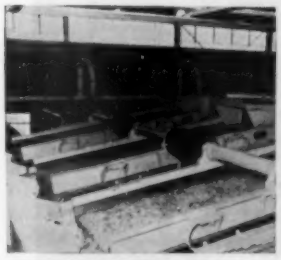
To learn how you can make this low-cost efficiency work for you, contact your Link-Belt representative, or write us direct.

14,[illegible]

LINK-BELT

LIQUID VIBRATING SCREENS

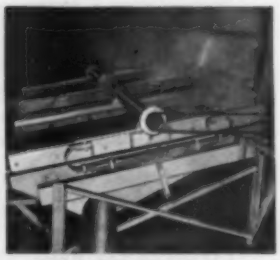
There's a place for LINK-BELT vibrating screens in all these phases of processing



PRIMARY SCREENING of cold juice separates bagasse from liquid. For best results, 10 to 30-mesh cloth is recommended.

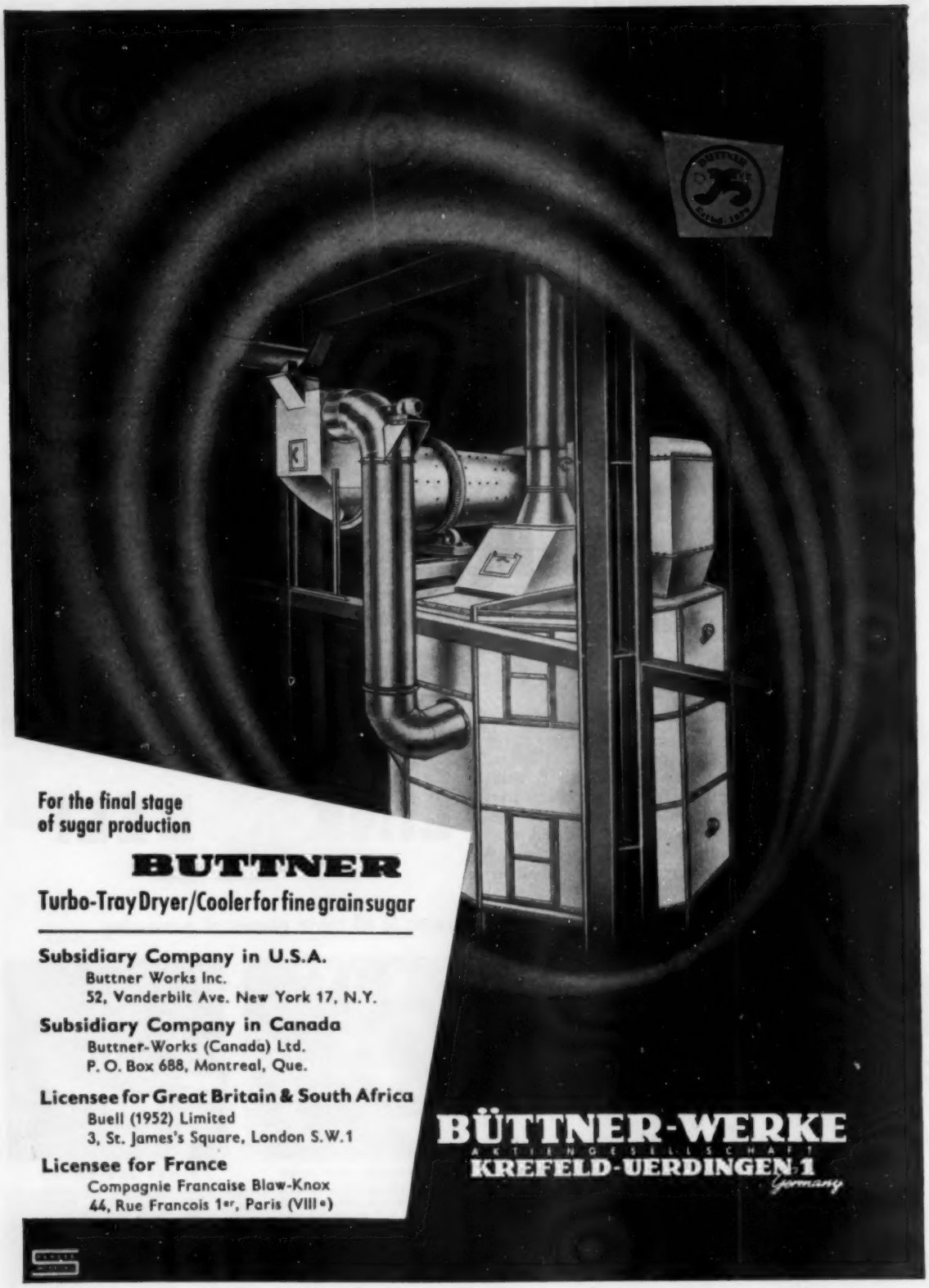
SECONDARY SCREENING provides finer separation of solids from cold juice. Recommended screens range from 20 to 40-mesh cloth.

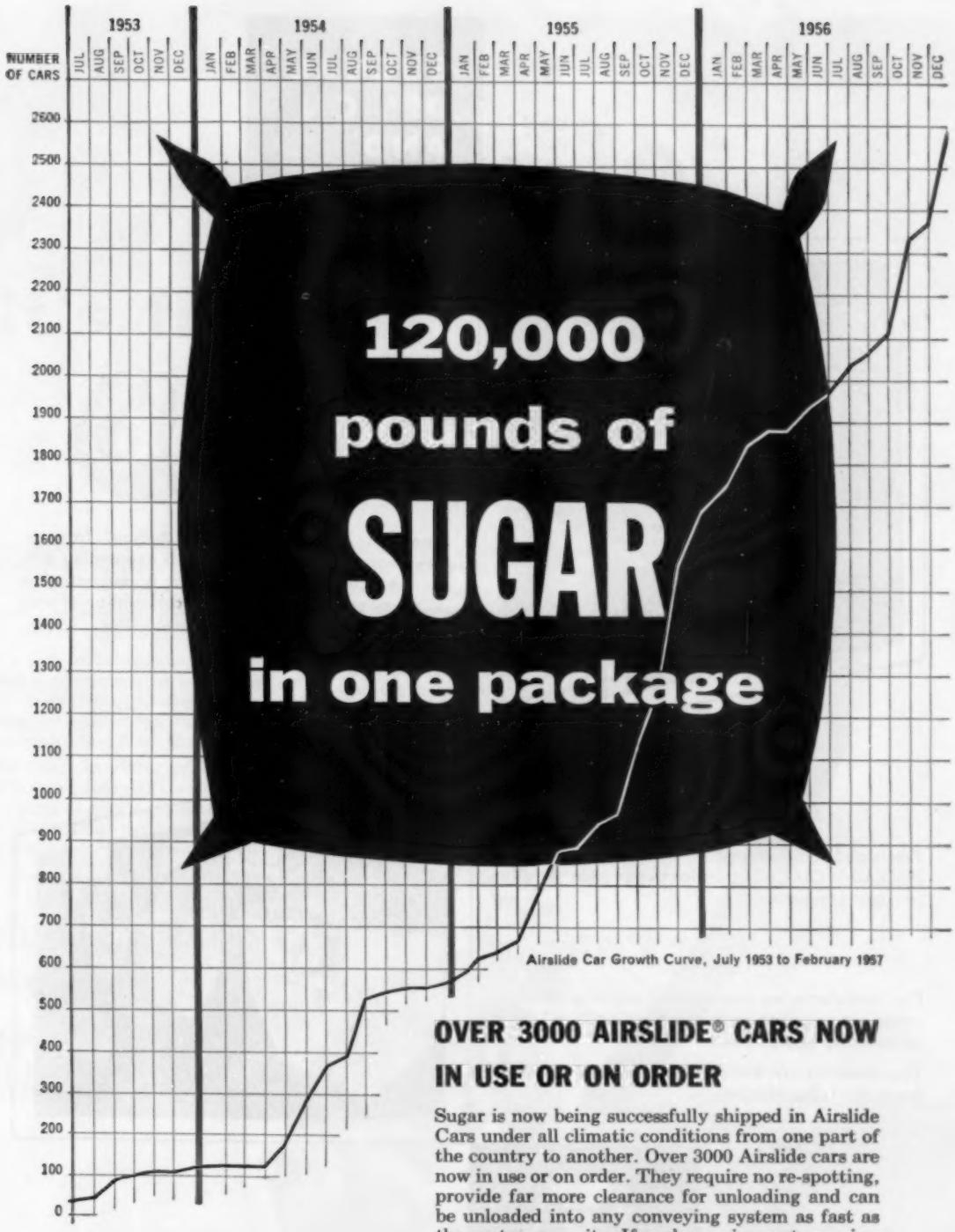
SCREENING HOT JUICE discharged from clarifier requires 40 to 100-mesh cloth to remove impurities solidified in heating process.



FINAL SCREENING of hot clarified juice with Link-Belt liquid screens removes all solids prior to crystallization.

LINK-BELT COMPANY: Engineers • Manufacturers • Exporters of Machinery for Handling Materials and Transmitting Power • Established 1875.
EXPORT DIVISION: 2680 Woolworth Bldg., New York 7, U.S.A., Cable Address: Linkbelt—New York • Representatives Throughout the World.

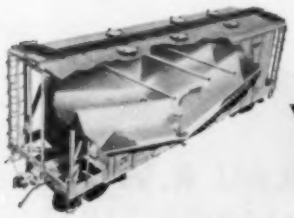

For the final stage
of sugar production
BUTTNER
Turbo-Tray Dryer/Cooler for fine grain sugar
Subsidiary Company in U.S.A.
Buttner Works Inc.
52, Vanderbilt Ave. New York 17, N.Y.
Subsidiary Company in Canada
Buttner-Works (Canada) Ltd.
P. O. Box 688, Montreal, Que.
Licensee for Great Britain & South Africa
Buell (1952) Limited
3, St. James's Square, London S.W.1
Licensee for France
Compagnie Francaise Blaw-Knox
44, Rue Francois 1er, Paris (VIIIe)
BÜTTNER-WERKE
AKTIENGESELLSCHAFT
KREFELD-UERDINGEN 1
Germany



Airslide Car Growth Curve, July 1953 to February 1957

OVER 3000 AIRSLIDE® CARS NOW IN USE OR ON ORDER

Sugar is now being successfully shipped in Airslide Cars under all climatic conditions from one part of the country to another. Over 3000 Airslide cars are now in use or on order. They require no re-spotting, provide far more clearance for unloading and can be unloaded into any conveying system as fast as the system permits. If such requirements are important to you, write today for full information about General American's Airslide car.



CLEAN INTERIOR DESIGN. *All-welded construction provides maximum sanitation and minimum product retention. All hatches and outlets provide a hermetic seal, assuring complete in-transit protection.*

AIRSLIDE GENERAL AMERICAN TRADE MARK

It Pays To Plan With General American

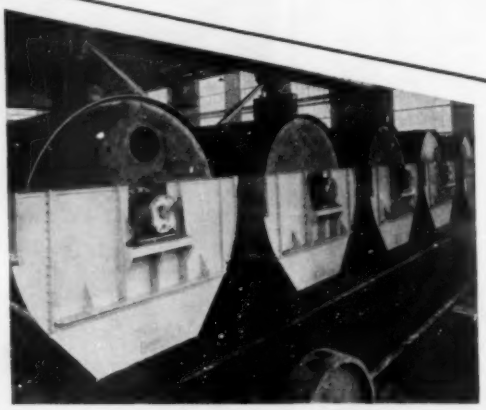
GENERAL AMERICAN TRANSPORTATION CORPORATION

135 South LaSalle Street • Chicago 90, Illinois • Service Offices In Principal Cities • Service Plants Throughout The Country

BUCKAU DESIGN AND BUILD

Evaporator stations fitted with „Buckau" Through-Flow Evaporators. Maximum heat exchanging effiency, hence less heating surface is required; low juice temperatures and minor discolorisation of juice as a result of more improved construction.

Filters of Sugar Industry
BUCKAU-WOLF Cell Filters for sludge juice filtration in sugar production.



Our manufacturing schedule for sugar production comprises complete cane and beet sugar mills and all auxiliary equipments.

Your inquiries are invited without obligation.
Apply for full particulars.

B W

MASCHINENFABRIK BUCKAU R. WOLF

AKTIENGESELLSCHAFT · GREVENBROICH-NEUSS

GERMANY

9052

Cane sugar . . . beet sugar—both can be freed of thermophilic bacteria with efficient, economical Celite* filtration.

If you are refining beet sugar, filter the thick juice or standard liquor.

If you are refining cane sugar, filter the washed sugar liquor. In both cases, as an added precaution, polishing char or carbon liquors will eliminate the possibility of contamination from char filtration.

The result in either case is brilliantly clear liquid sugar that will remain positively pure as long as it is protected from recontamination by spores in the surrounding air.

Celite also gives you important advantages over other diatomites. First, its lower wet density provides greater filter surface coverage . . . six bags do the work of seven bags of other diatomites. Second, you get more consistent results because Celite is more uniform. Each bag is mined and processed at the world's largest and purest commercial diatomite deposit . . . and sped to you direct or through J-M's nationwide warehouse network.

For more information on how Celite filtration helps the sugar industry make better products at less cost, call your nearby Celite engineer or write Johns-Manville, Box 14, New York 16, N.Y. In Canada, Port Credit, Ontario.

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products.

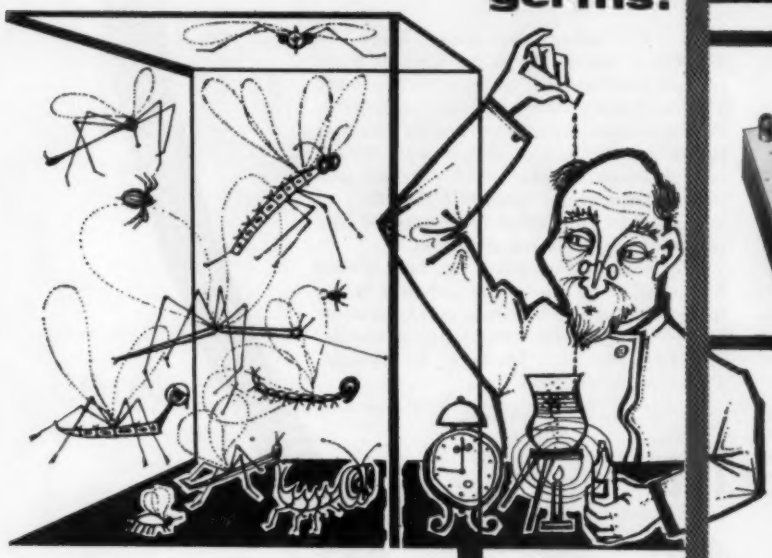
Johns-Manville CELITE

diatomite filter aids

JOHNS-MANVILLE JM PRODUCTS

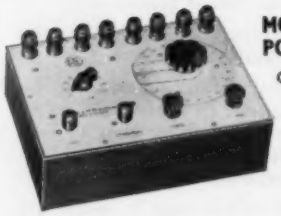
Louis Pasteur

had to work fasteur to avoid coming to terms with any of his germs!



THERMOCOUPLE TEST SET
Cat. No. 7556

A potentiometer, wheatstone bridge, galvanometer and potential source with series resistance all forming one compact, portable unit.



MODEL "5" POTENTIOMETER
Cat. No. 7554

A new students' potentiometer which has wide applications in simple potentiometric problems.

PORTABLE POTENTIOMETER
Cat. No. 7569/P

Now well established as a compact, portable instrument of great versatility.

Please address complaints about this advertisement or requests for information on Pye Chemical or Physical Instrumentation to:—

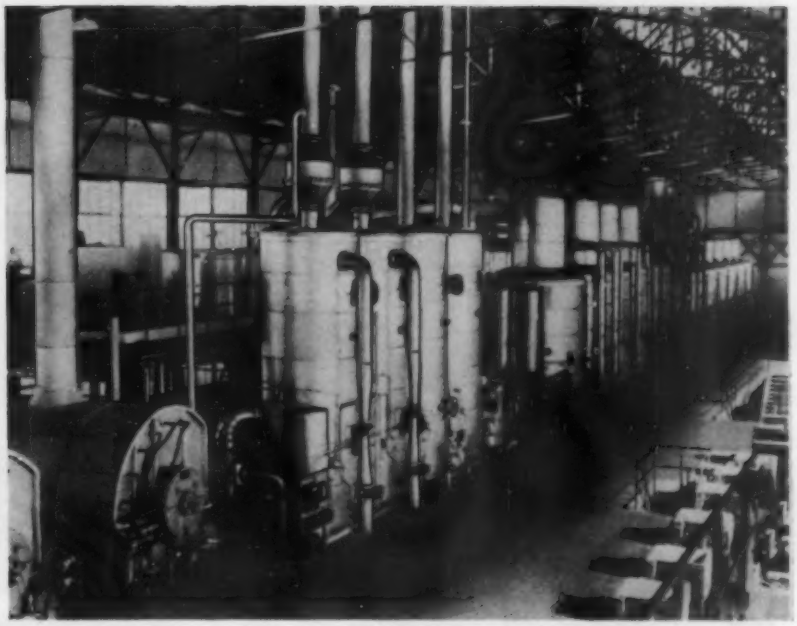
Pasteur was one of the greatest discoverers in medical history—and his work has benefited millions of men, women and children. His work is carried on by scientists all over the world who are working, sometimes at great risk to themselves, to improve the lot of man physically and towards improving his environment. Many of these men use Pye Scientific Instruments, because of the precision and reliability which are assured by the designers and craftsmen in the W. G. Pye factory at Cambridge.

SCIENTIFIC PYE INSTRUMENTS

W. G. PYE & CO., LTD.
Telephone: Cambridge 54411 Telegrams: Pye-Cambridge

GRANTA WORKS, NEWMARKET ROAD, CAMBRIDGE
London Representative: Holborn 2767

18



Inside view of the Malatya Sugar Mill (Turkey)

SUGAR FACTORIES ERECTED THESE LAST 10 YEARS

BEET

	T/day
France	
Artenay	1200
Cagny	800
Corbeilles-du-Gatinais	1200
Origny-Ste-Benoite	900
St-Leu-d'Esserent	1000
Algeria	
Mercier-Lacombe	300
Turkey	
Kayseri	1800
Malatya	1200

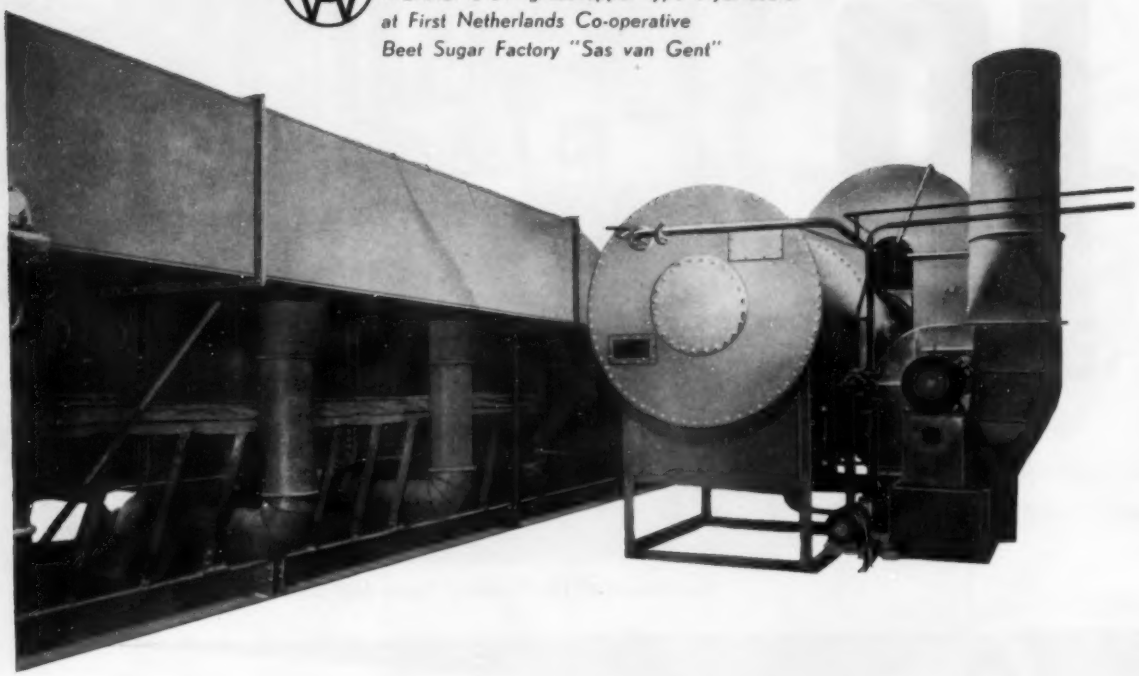
CANE

	T/day
Bolivia	
Guabira	1000
Brazil	
Jacarezinho	600
Matosinhos	800
Vassununga	1000
Uruguay	
El Espinillar	1200
Venezuela	
Ureña	700
Madagascar	
Ankaratra	2500
French Congo	
Niari	1150
Belgian Congo	
Uvira	1200
Thaïland	
Supanburi	1500

Cie DE FIVES-LILLE

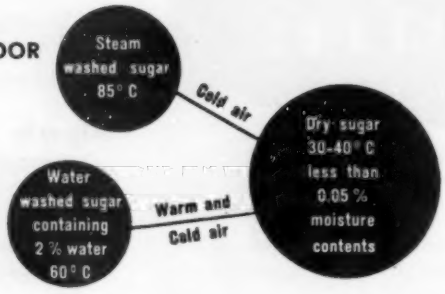
7, RUE MONTALIVET, PARIS VIIIe • CABLE ADDRESS: FIVILLE-PARIS

WERKSPOOR grasshopper type dryer-cooler at First Netherlands Co-operative Beet Sugar Factory "Sas van Gent"



This new WERKSPOOR *grasshopper type dryer-cooler keeps the lustre of your sugar*

with its simple and low construction, economical working, built in any capacity you may require, this modern WERKSPOOR apparatus will guarantee you:



- **absolutely undamaged crystals**
- **drying and cooling in record time**
- **close contact air-sugar**
- **completely dust free atmosphere**

STORK — VERENIGDE MACHINEFABRIEKEN V·M·F NEDERLAND STORK • WERKSPOOR — WERKSPOOR

For grasshopper type dryer-coolers please apply to Werkspoor, Amsterdam

Bauduin

In addition to improving the quality of beet sugar by removing odor, color and other impurities, treatment with DARCO activated carbon substantially improves production economy.

For example, you get faster boiling in the evaporators and pans when you use DARCO. Foaming is reduced because of adsorption of surface active materials, and maximum boiling rates are maintained. An increase in slice is realized if the evaporators are the bottleneck.

DARCO treatment also reduces scale formation . . . intervals between boil-outs are extended 30 to 50%. The result: higher efficiency and better evaporation.

Want to find out more about how DARCO can help you make better sugar at lower cost? Just write or call Atlas today for recommendations on how this process can be applied in your factory.

DARCO

REG. U. S. PAT. OFF.

CHEMICALS DIVISION
ATLAS POWDER COMPANY
WILMINGTON 99, DELAWARE

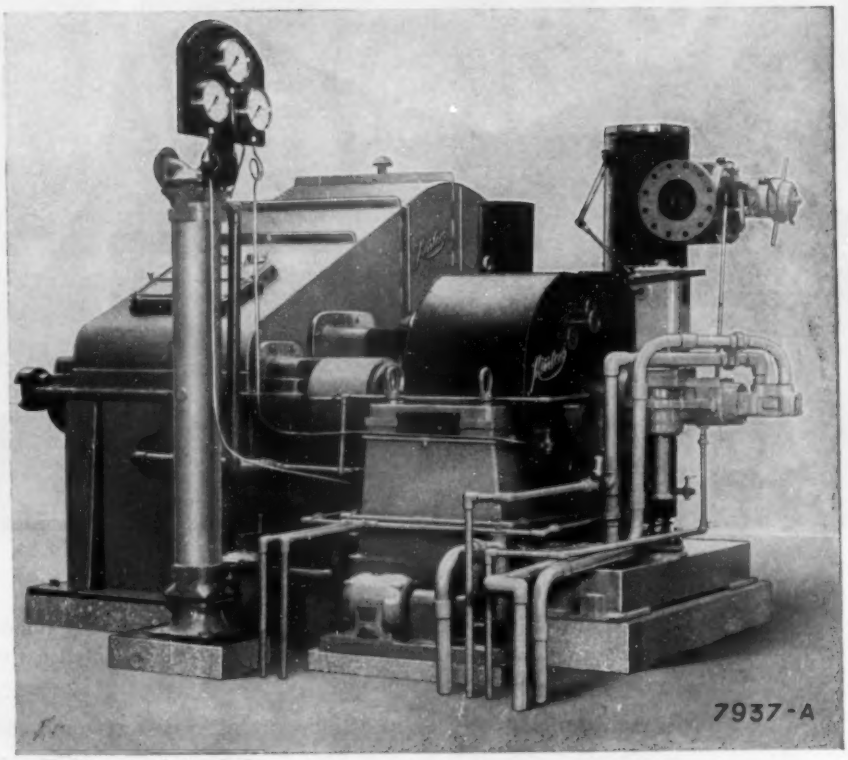
In Canada: Atlas Powder Company, Canada, Ltd.
Brantford, Ontario, Canada

Mirrlees'

TURBINES for Mill Drives

Mirrlees Turbines have proved economical and completely reliable as Mill Drives in Sugar Factories throughout the world. Many repeat orders have been received after successful initial installations.

Mirrlees Turbines can be supplied single or multi-stage, to suit existing steam conditions. They are fitted with the Woodward Precision Governor which gives complete control over a wide range of speeds.



Right: this 600 b.h.p. Single Stage Machine has been arranged compactly to suit conditions at site. Speed is 4,000 r.p.m. reducing to 75 r.p.m. through Double Helical, Double Reduction Gear Box. Note the Clutch at the far side of the high speed shaft, for connecting to the small motor for reversing. This Mirrlees Turbine is destined for Australia.

MIRRLEES TURBINES ALREADY INSTALLED

7 550 bhp CUBA	3 500 bhp AUSTRALIA	3 600 bhp AUSTRALIA
6 600 bhp DOMINICAN REPUBLIC	1 300 bhp SOUTH AFRICA	2 450 bhp WEST AFRICA
1 250 bhp INDIA	1 450 bhp SOUTH AFRICA	1 400 bhp WEST AFRICA
	5 450 bhp WEST INDIES	

The MIRRLEES WATSON COMPANY LIMITED
ENGINEERS GLASGOW

WINGS DAY SEPT. 18th
GIVE FOR THOSE WHO GAVE

SCOTLAND STREET, GLASGOW C. 5, SCOTLAND

Nowadays Norit sells more than twice the quantity of activated carbon to the world's sugar industry than in 1938!

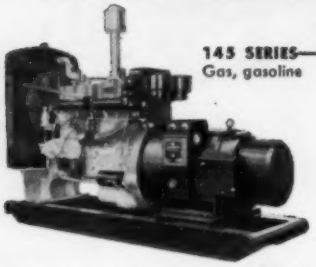
The number of Sugar Refineries has not been doubled since, nor the total output of refined. *How come?* Ask the man who uses Norit, he knows! We know too, having the know how!

UNITED NORIT
SALES CORPORATION LTD.
AMSTERDAM - HOLLAND

NORIT

Write for full particulars!

WAUKESHA

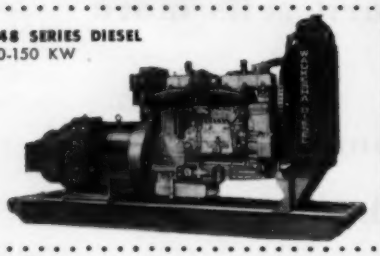


145 SERIES—45-110 KW
Gas, gasoline

Industrial ENGINATORS®

50-800 KW

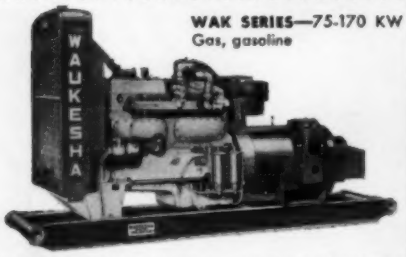
NATURAL GAS • LPG • GASOLINE • DIESEL



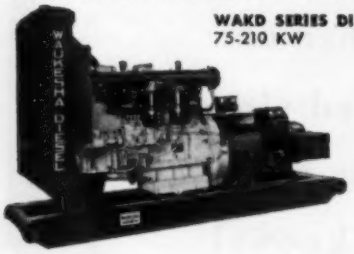
148 SERIES DIESEL
50-150 KW

- Developed by more than fifty years experience in building heavy-duty engines and electrical equipment, Waukesha Enginators are accurately balanced engine and generator combinations that perform dependably in all applications requiring a smooth, steady flow of power for continuous, intermittent and standby duty.

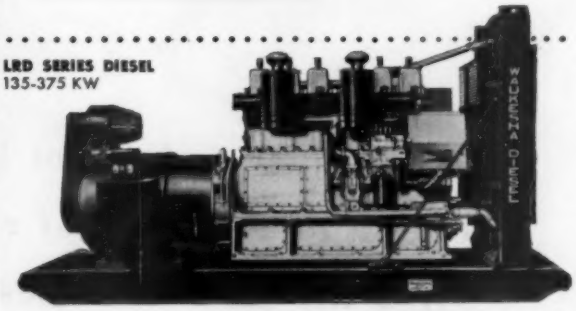
50 to 800 KW capacities—gas, gasoline, normal or turbocharged Diesel operation.



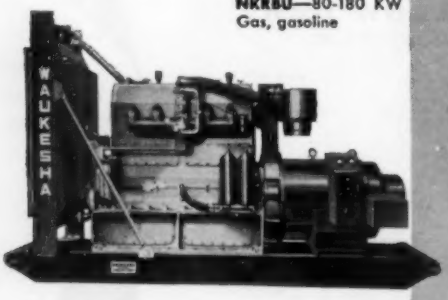
WAK SERIES—75-170 KW
Gas, gasoline



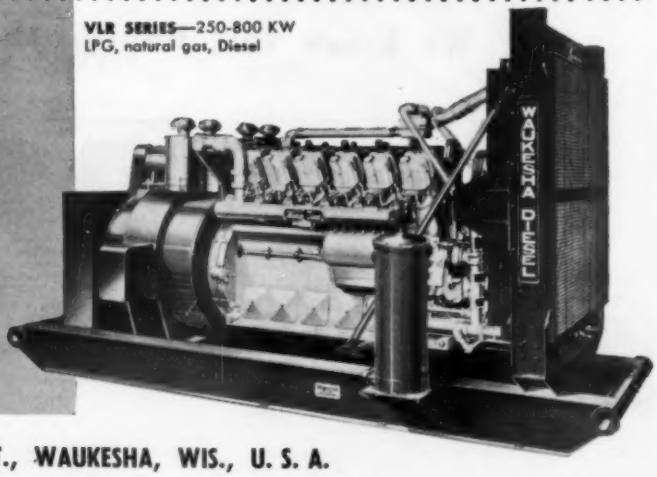
WAKD SERIES DIESEL
75-210 KW



LRD SERIES DIESEL
135-375 KW



NKRBU—80-180 KW
Gas, gasoline



VLR SERIES—250-800 KW
LPG, natural gas, Diesel

WRITE for bulletins for these and other models

336-R

WAUKESHA MOTOR COMPANY, EXPORT DEPT., WAUKESHA, WIS., U. S. A.

SUGAR

AUGUST, 1957

Continuous Filtration of First Carbonation Juice

by J. Delcourt
Technical Director, Notre-Dame Refinery
Oreye, Belgium

During the 1956 campaign at the Notre-Dame Refinery there was put into service a "filter-thickener" built according to a design recently patented by Compagnie de Fives-Lille.

At this factory, raw juice is produced in a Raffinerie-Tirlemont continous beet diffuser. The diffusion juice first undergoes a preliming according to Brieghel-Mueller, which is followed by a main liming that raises its alkalinity to 15 grams of CaO per liter. The juice is then heated to 85° C and is carbonated under constant conditions to an alkalinity of 0.8 gram of CaO. After reheating to 91° C, the turbid carbonated juice is sent to the filter-thickener, where it is filtered at constant pressure that are adjustable between 7 to 28 lbs. sq. in.

Out of each 100 liters of turbid juice entering the filter-thickener, 92 liters come off as clear juice which is then processed through the usual stages of second liming, second carbonation, etc. The remaining eight liters goes out in the form of mud containing 360 grams of $CaCO_3$ per liter. This mud is then desugared by a Dorr-Oliver rotary vacuum filter.

The Fives-Lille filter-thickener has the following constructional features:

A welded steel-plate cylindrical tank 8 ft. 6 in. in diameter and 18 ft. long, shop-tested at 43 lbs. sq. in. and designed for a maximum service pressure of 28 lbs.

This tank has a central hollow shaft carrying 12 hollow disks, each of which is divided into 10 light-alloy sectors perforated on their flat surfaces and covered with filter cloth. The total filtering area is 1100 sq. ft.

The hollow sectors of each disk are joined by a single manifold which is fitted inside the hollow central shaft; there are as many manifolds as there are sectors in a disk. These ten manifolds lead to two distribution heads comprising four compartments each, and located, respectively, at the two ends of the central shaft outside the tank.

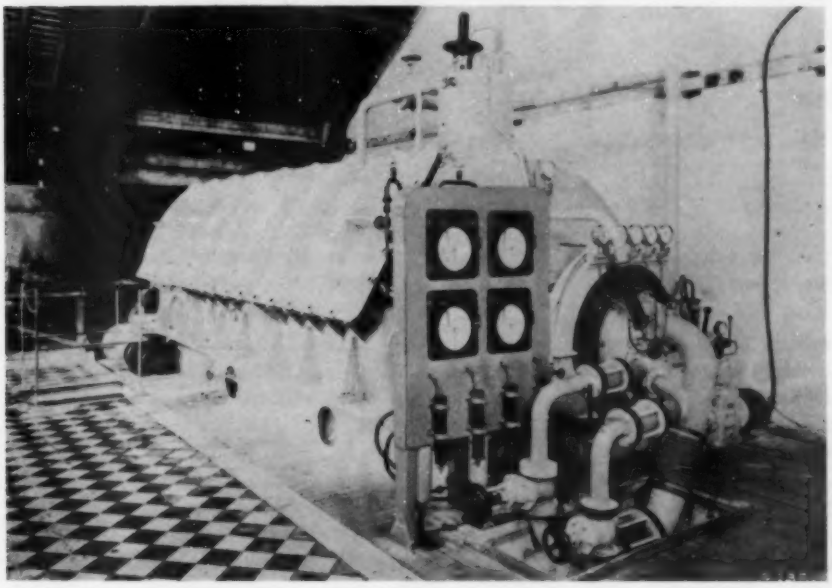
The cylindrical tank is provided with a two-piece lid or door extending over its entire length to allow ready access to the disks. A dome at the top serves as an air chamber. The central shaft is driven through a variable speed control that permits it to be operated at from 0.15 to 1 rpm. Pressure inside the tank is controlled by a regulating valve placed on the juice inlet pipe. The tank operates with its filtering disks entirely immersed in the turbid first-carbonated juice which enters at the bottom of the filter.

The filtering operation proceeds as follows:

The turbid carbonated juice entering the tank covers the disks and deposits carbonate of lime and other precipitated matter on the filter cloth. The filtered juice flows into the disk's manifold, from which it is discharged through distributing heads comprising four compartments, three of which receive the filtered juice from the sectors. Pressure regulators make it possible to maintain adjustable back-pressures in these three compartments. Due to these variable back-pressures, filtration is accomplished under gradually increasing pressure, and a rapid choking of the cloth is thus averted. At each rotation of the central shaft, each filtering sector is successively placed in communication with the three discharge compartments and filtration occurs under three stages of pressure: the first filtration takes place under one-third of the pressure that prevails inside the tank; the second filtering stage takes place under two-thirds of the full pressure, and the third under full pressure; the last compartment is then in direct communication with the atmosphere and the filtered juice flows out.

During the same rotation the filtered mud is dislodged from the cloth by injecting a small amount (12%) of clear juice into each of the hollow sectors of the disks by way of the distributing head, where a special regulation maintains, by means of an automatic valve, a pressure slightly above that pre-

Fig. 1. *Fives-Lille filter-thickener, outside view.*



vailing inside the tank, regardless of possible variations. Scrapers located on the median line of the thickener remove the mud and direct it toward hoppers between the disks, which discharge it into a mixer placed under the tank, and thence, after being homogenized, it passes through a density regulating valve and goes to the Dorr-Oliver filter for desugaring.

Duration of the four phases of the filtration depends on the rotation speed of the central shaft and the size of the four compartments. The latter are designed in such a way that the first filtration is accomplished over a rotation angle of 80°, the second, an angle of 90°, the third, an angle of 155°. Flushing out the mud occurs over an angle of 35°.

When the filter-thickener was first put in operation it soon had to be taken out of service; the filtered juice was turbid and many of the filter cloths were torn. This trouble was due to incorrect adjustment of the scrapers and the filter cloths (made out of Lainyl 1x/C4/7cloth) were cut too large. When these maladjustments were rectified, the filter thickener then operated satisfactorily with average results as described in Table I.

Fig. 2. *Fives-Lille filter-thickener, showing an unclothed disc.*

As the delivery practically varies proportionately to the square root of the pressure prevailing inside the tank, it may be considered that the filter can easily process the juice from 1800 tons of beet provided a well-conducted purification supplies the filter with high-quality juice (FK less than 3).

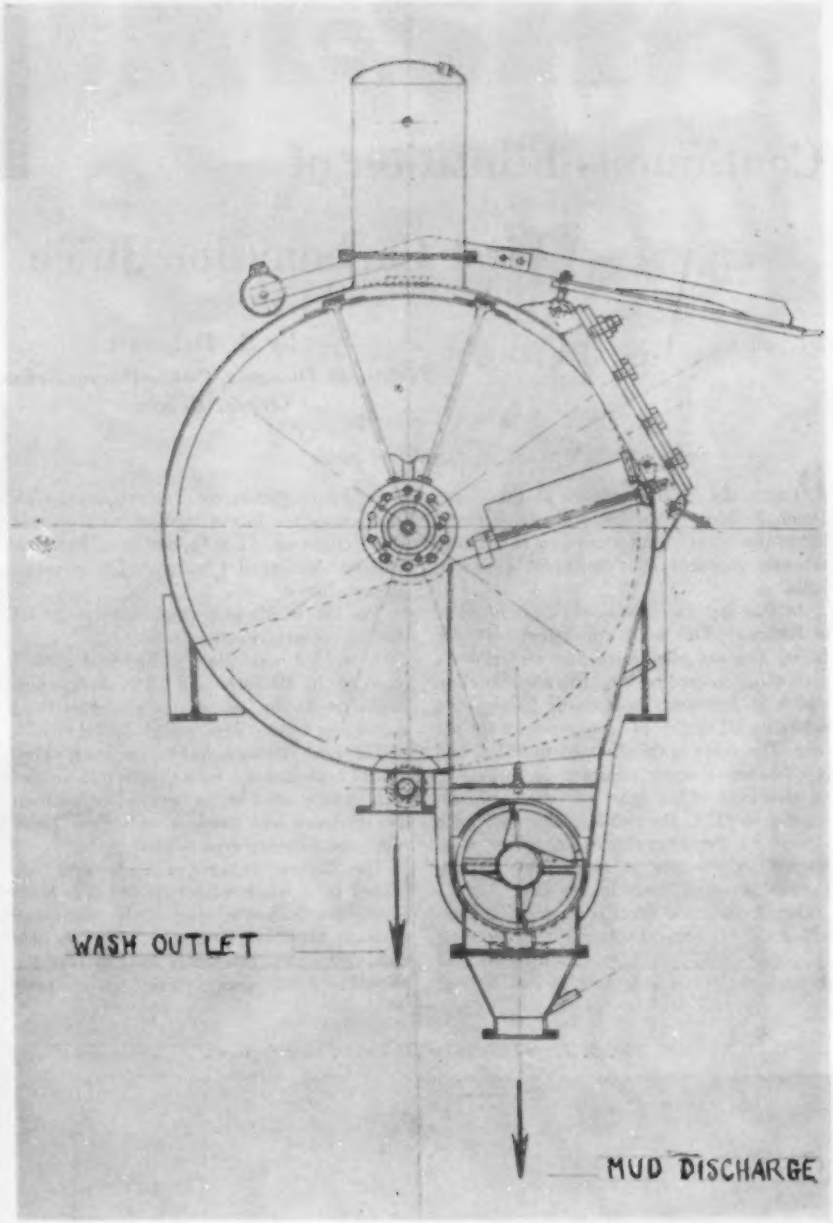


Fig. 3. *Cross section, Fives-Lille filter-thickener.*

Table I.

delivery of turbid juice	44 cu. ft./min.
delivery of filtered juice	40 cu. ft./min.
delivery of thickened mud	3,5 cu. ft/min.
concentration of thickened mud	360 gr. $CaCO_3$/litre
filtration factor (FK)	2.10
pressure inside the tank	14 lb./sq. in.
Blowing pressure (gauge)	¼ lb./sq. in.
rotation speed	18 rev./hr.
loss in mud	0,06% beet
cake wash water	0,35 litre per lb. of cake
average beet tonnage processed	1.600 tons/day

A quantity of turbid juice corresponding to 400 tons of beets per day was processed through ordinary filter presses. The brix and purity of the two filtered juices were practically identical; the juice from the filter thickener was brighter.

The filter cloths are easily kept clean by back washing (every 15 days without dismantling them) first with hot water, then with a weak acid solution followed by a hot water rinse.

A 270 sq. ft. vacuum filter easily handled all the concentrated mud from the filter thickener and could have handled more; cake of 5/8-to 3/4-inch thickness were obtained with a drum speed of 12 to 18 turns per hour. Costs of the filter-thickener and an equivalent filter press station with two settling tanks and two vacuum filters are about the same, but the filter-thickener occupies much less space. In addition, there is less sugar lost in the cake.

However, a prime condition for the successful operation of this apparatus is to have a limed juice with a good filtration co-efficient on the Brieghel-Mueller scale. It is mandatory for the factory staff to make certain that the raw juice has been properly purified.

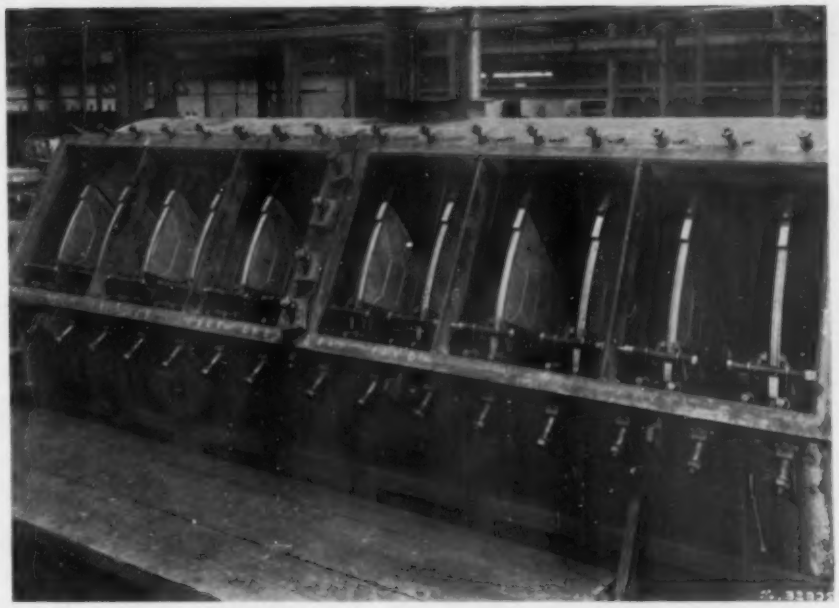


Fig. 4. *Fives-Lille filter-thickener, with discs partly mounted.*

■

The Twenty-Four Hour Cane Harvest

By Jorge A. Acosta

It is a truism that, with labor and material costs increasing in the sugar industry while prices for the product are rather strictly limited, only the efficient mills can survive in a highly competitive market. Mechanically and chemically striking improvements have been made in the manufacture of sugar; particularly in varietal selection, planting, cultivating, harvesting grinding, processing and packaging or bulk delivering the finished product.

This leaves at least one area in which efficiency can be increased; the inefficient or double handling of cane being delivered to the mill might be subject to considerable improvement with attendant savings and better efficiency.

As a first step it will be worth while to analyse the currently popular method, in use by many centrals, of feeding the mill by grabbers. The cane is brought to the batey in trucks, trains of tractor-pulled cane carts, or by rail. The cane, while loose, is packed in a single bundle ready to be put on the feeding table and delivered to the knives and crushers. Direct feeding, however, is not general practice. The cane bundles are dumped over a wall and scattered to be picked up subsequently, a little at a time, by grabbers and fed to the mill or stored in a pile elsewhere in the yard to supply the mill at night.

On the average it takes three trips of the crane to move a single bundle of cane even if it goes directly to the feeding table. When, instead it goes to the storage pile for use at night, several additional handlings are necessary. And, when finally delivered to the feeding table, the cane has been completely disarranged thereby hindering proper feeding of the mill tandem, lowering the mill's capacity and efficiency. Frequently two cranes are neeed, one for feeding the mill and one for delivering the cane to storage piles. If, as is frequently the case, there are delays in grinding the stored cane, there will be a noticeable loss of sucrose. It should be noted also that in some lay-outs, cane is loaded in the field on wagons which then travel sometimes as far as two miles *away* from the mill to a loading station where the cane is transferred to rail cars. The rail cars are then delivered to the mill where the procedure outlined above is followed. The cane is handled at least four times by the time the crane picks it up at night for delivery to the feeding table. Such rehandling adds nothing to the value of the cane but does add to the expense.

One solution may be found in cutting, loading and delivering cane to the mill on a twenty-four hour per day basis. This would permit the cane to be stored, if storage were necessary, in the fields. Delivery should be as directly as possible to the mill. This around-the-clock harvesting operation would cut down on the equipment necessary for harvesting and delivering, but would require proper illumination of the fields and flood lights on the transportation and harvesting equipment. As each cane wagon is loaded it can be pulled out of the field to the road, coupled into trains and delivered to the mill by rubber tired tractors. Wagons should be provided with chain mats for dumping the cane load intact. The carts would dump directly onto the feeding table and, in the case of larger tandems, two feeding tables could be provided.

An essential consideration would be careful traffic planning and coordination to insure a continuous supply of fresh cane without interrupting the mill operation. This, however, should be easily possible. Instead of rushing through the day to provide sufficient cane for a twenty-four hour grind with waste and excess field and transportation equipment, the author believes that this system would cut waste and equipment requirements and insure fresher cane to the mill.

Heavy Duty Trucks For Severe Service

REQUIREMENTS for the transportation of hundreds of millions of tons of cane each year to supply the world demand for sugar have been met by some highly specialized automotive equipment. Extensive experimentation and trials have been held over the years in the difficult topography of the Hawaiian Islands. The Hutchinson Sugar Company whose 28,000 acre plantation is managed by C. Brewer & Company Ltd., now uses five identical Peterbilt Model 381 off-highway heavy-duty trucks in hauling sugar cane.

Some 5,200 acres of the total plantation are devoted to the growing of sugar cane on the mountain side of Mauna Loa. It is known as an "unirrigated plantation," inasmuch as they depend upon natural precipitation for the growing of their sugar cane. The sugar cane here takes from 24 to 40 months to mature, depending upon the altitude at which it is grown.

In this situation they grow from 90 to 150 tons of sugar cane per acre, which yields from 9 to 11 tons of sugar per acre. The trailers on which the sugar cane is hauled are designed for loads of 25 tons, of which, in the dryer weather, about 18 tons will be net cane and the balance trash. During wet weather the trash will run from 50 to 60 percent of the loads, which also increases the gross weight on the trucks. The large Goodyear 16:00 x 21 tires serve to give these trucks greater flotation in the muddy cane field. They also have the advantage as single tires that they do not collect rocks as is common between dual tires.

Hutchinson Sugar Company has had a long and varied experience in the operation of cane hauling equipment, and have gone through the gauntlet of dump trucks, conveyor bottom trucks, side unloading trucks, single axle semi trailers. They are now using dual axle semi trailers pulled by Peterbilt dual drive off-highway trucks. Their experience in powering trucks started with the 150 HP Cummins Diesel, progressed through the 165 and 200 H.P. models. At present they are using the 250 H.P. Model NT-6-B which is a turbo charged model which has the characteristic of maintaining practically a constant horsepower curve from sea level to 12,000 feet. Since most of their haul is down hill, they drop from 3300′ to 800′ in a distance of 3 miles, the Model NT-6-B gives them a quicker turn around and enables them to complete a round trip in less time than with other engines they have used, according to C. H. "Al" Ahlf, Brewer's Automotive Engineer.

The Peterbilt trucks are equipped with Allison Torque Converters, Torqmatic Transmissions and Torqmatic Brakes. Mr. Ahlf states that they like the torque converter because it enhances the life of the engine and the drive lines, and it is more comfortable in operation. They like the Torqmatic transmission because of its ease of operation, there are no clutches and they always operate under full throttle which simplifies driver training a great deal and with the gears always in mesh there is less damage to gears. They feel that the Torqmatic brakes provide greater safety, they extend the brake life about six times over other methods of braking, and these brakes help to keep the Diesel engines at the proper operating temperature. Mr. Ahlf believes that their cost per ton of hauling capacity, which stands at about $1000.00, is the lowest in the industry.

C. Brewer and Company was founded in 1816 and today the plantations it serves process about 25% of the sugar produced in the Hawaiian Islands. According to the automotive engineer, they have today more specialized equipment in service than any other agricultural industry in the world under one management.

One of five identical trucks used in hauling 25 tons of cane per load on Hutchinson Sugar Company in the Hawaiian Islands. A Peterbilt off-highway track powered with a 250 h.p. Cummins Diesel engine, it operates in rugged terrain on the slopes of Mauna Loa.

■

Chemical Exposition

The 26th Chemical Exposition will be held in New York at the new Coliseum from December 2 to December 6th, 1957. More than 500 exhibitors will occupy all four floors of the Coliseum. It will be the first time in six years that the Chemical Exposition has been held in New York. Recently the formation of an advisory committee was announced and included J. V. N. Dorr, Chairman of the Board, Dorr Oliver Inc., important suppliers of clarifiers and filters to the sugar industry.

■

Correction: *Record Yield At Calumet*

The article appearing on pages 25-27 of the June 1957 issue of SUGAR y AZÚCAR comprising an unusal record from the past is, as should have been mentioned in the article itself, a condensation of a chapter from an exceptionally interesting book by Hubert Edson, soon to be published. The book, which is tentatively titled "Sugar Scarcity to Surplus", traces the author's 62 years in developing and operating sugar properties in the United States and the West Indies. It will be reviewed in the pages of SUGAR y AZÚCAR upon publication.

Diffusion of Sugar from Shredded Cane

S. L. Phansalkar and K. H. Rao

Indian Institute of Sugar Technology, Kanpur, India

In recent years, the extraction of sugar from cane by diffusion process has attracted the attention of many sugar technologists. Silver[1] developed a method employing double rotatory battery for diffusion, and Willcox[2] gave a design of a continuous diffusion apparatus for the same from cane. Detailed investigations on the diffusion of sugar from cane have been carried out at Mackay Sugar Research Institute in Queensland;[3] the dependence of rates of diffusion of sugar at different temperatures on the size or thickness of slices of cane has been studied. All these investigations referred chiefly to the slices of thickness varying from ½ to 1/16 inch. With minimum size of the slices studied (viz. 1/16 inch), the maximum extraction of sugar corresponding to 95 per cent of extractable sugar could be obtained after 50-60 min. at 180°F.

Table I

Diffusion of Sugar from Cane

Sample No. of Shredded Cane	*Available Sucrose*	*Extracted Sucrose %*	*Percentage of Sugar Diffused*
1	38.96	38.44	98.6
2	47.19	44.70	94.7
3	38.55	36.77	95.4
4	38.55	37.33	96.8

Amount of shredded cane used; 300 gm, (extracted twice); time of contact = 5 min.

Experiments carried out at this Institute referred to the diffusion of sugar from shredded cane on which no information exists in the literature. A known quantity of cane shredded on a power driven laboratory shredder, was immersed in water maintained at a desired temperature for a known interval of time. The extracted solution was estimated for its sucrose content. Table 1 gives an account of the results obtained. It is interesting to note that in 5 min., 95-98 per cent of the extractable sugar could be obtained by diffusion using the shredded cane. The experiments revealed the possibility of successful use of the method on a large scale.

Literature Cited

[1] Silver, H. F., Pat. No. 2,658,010, U.S.A., 1953.

[2] Wilcox, P. W., Sugar J., 46, 28-30 (1951).

[3] Zemek, R. J., Tech. Rept. No. 25, Sugar Res. Inst., Mackay, Queensland (1954).

■

Zerban Luncheon Hears W. R. Anderson

At the monthly luncheon of the Zerban Sugarmen's Association held at the Chemists Club of New York on July 10th the principal speaker was W. R. Anderson whos subject was "Filtration Today—with Synthetic Cloths." Mr. Anderson, now with Stehli & Company, Inc. has had many years experience with Corn Products Refining Company and has confronted numerous problems in filtration. He exhibited various synthetic filter cloths of nylon, dacron, orlon and other fabrics designed for special filtration problems. While the use of synthetic filter cloths is not yet widespread in the sugar industry, a number of examples of the use of this material was quoted.

■

Holly Earnings Increase

In the annual report for the year ended March 31st, Merrill E. Shoup, president of Holly Sugar Corporation, reported that the company had produced a net income of $1,910,377 compared to $1,760,263 for the previous year. After preferred stock dividend requirements, income was $2.72 per share of common compared to $2.47 the previous year. Sugar production was equivalent to 6,004,071 hundredweight, 7.7% greater than in the previous year. Unit volume of sugar sales for the fiscal year were 17.4% over the previous year and dollar sales were also substantially in excess of 1955-56. During the year $1,541,712 was spent on equipment purchases and replacements and on property acquisitions. Some of the larger equipment purchases included a pulp dried, pelletizers, and bulk storage at Swink, Colorado; two La Feuille crystallizers and a sugar cooler at Tracy, California and increased dried pulp capacity at Alvarado, California.

■

Chemical Society Meets in September

The use of nitrated carbohydrates as drugs, the relationships of the sugars in various blood types, and the differences found in synovial fluid carbohydrates in arthritic and normal individuals will be among the topics discussed by the American Chemical Society's Division of Carbohydrate Chemistry at the Society's 132nd national meeting in New York City, September 8 through 13.

Dr. Raymond U. Lemieux of the University of Ottawa, one of the two chemists who first synthesized sucrose, will preside over a symposium of structure and reaction mechanisms in carbohydrate chemistry, according to Norman F. Kennedy, chairman of the division.

A symposium on the chemistry, technology and pharmacology of nitrate acid esters will be led by Dr. Frederick Olsen of Olin Mathieson Chemical Corporation, New Haven, Conn., said Mr. Kennedy, who was formerly director of research of the Corn Industries Research Foundation, New York. The symposium will be held jointly with the Society's Division of Cellulose Chemistry.

General sessions on carbohydrate chemistry also will be included in the six-day meeting. The Hudson Award for outstanding work in the field of carbohydrate chemistry will be presented at a dinner sponsored by the division.

■

New Products of Sugar Chemistry

According to an announcement from Pfanstiehl Laboratories, Inc., highly efficient and economical sequestering ("chelating") agents have been prepared from certain polyhydroxy acids derived from sugar. These products, which have been named "seqlenes", have the property of occluding (surrounding) certain metallic ions such as iron and calcium and preventing them from being precipitated as sediment. They are capable of wide use in water softening, bottle washing, paint stripping, metal cleaning and derusting, electroplating, enhancement of germicidal action of antiseptics, textile processing, caustic refining of fats, and in paper manufacture. To supply this potential market, Pfanstiehl is making large additions to its manufacturing facilities.

■

Queen Sugar

On June 28th some 300 members of the Advertising Club of New York entertained Queen Sugar XV at a gala luncheon. Queen Sugar this year is Miss Yvonne Cheramie of Raceland, Louisiana. She was accompanied by Robert Miranda, president of the Louisiana Sugar Cane Fair and Festival Association and by Mrs. E. M. Simmons, whose husband is vice president of the McIlhenny Company. Members and guests of the advertising club received gift boxes provided by leading manufacturers and associations in Louisiana. The gifts consisted of products indigenous to Louisiana, with particular attention to sugar. (see following page)

Personal press station

Harold F. Saufley has become Vice President in charge of Raw Sugar and Molasses Operations of the American Molasses Company. **Frank E. Trager** is now General Industrial Sales Manager.

Joseph T. Elvove has been chosen President of the Sugar Club of New York for the 1957-58 season. Other officers include Andrew F. Heyden and E. R. Bourgeois, Vice Presidents; Samuel Schoenfeld, Secretary; and Albert Levin, Treasurer.

Rogelio Ramos Grau, director general of the Asociación de Técnicos Azucareros de Cuba visited the United States in June. Mr. Ramos was accompanied by his wife and his trip included Canada, New York and Washington. As Administrator of the Boletin Oficial of A.T.A.C. and director general of the Association, Mr. Ramos is well known to sugar men in North America as in Cuba and elsewhere in the sugar world.

Sr. Rogelio Ramos Grau

He reports that plans for the meeting beginning October 2nd are well advanced.

President Frank A. Kemp of The Great Western Sugar Company announced the appointments of **John D. Edmiston** as northern district manager, and **Lyman H. Andrews** as southern district manager. The latter has been in the company's service since 1919.

Mr. Cris Dobbins

Mr. Cris Dobbins has been elected chairman of the board of the American Crystal Sugar Company to succeed the late C. K. Boettcher. At the same time, **Mr. C. W. Briggs,** vice-president and general sales manager, became a member of the board of directors. **Mr. H. von Bergen** was re-elected president.

Corn Products Refining Company has announced the appointment of **Howard F. Harris** to the newly created position of Director of Public Relations. Mr. Harris was formerly Public Information Director of the Grocery Manufacturers of America, Inc. Corn Products recently acquired Refined Syrups & Sugars, Inc., pioneer manufacturer of liquid cane sugar products.

William F. Oliver, president, and **G. Vincent Pach,** vice-president of the American Sugar Refining Company, are members of the Corporations Committee of the Greater New York Fund campaign.

Queen Sugar XV, Yvonne Cheramie, being crowned by her predecessor, Lois Le Blanc, during the Annual Louisiana Sugar Cane Festival and Fair.

Sugar's Progress in

HUMAN RELATIONS

Roy J. Leffingwell

WHY COMMUNICATE?

. . . . Because it's Profitable

Communication is a relatively new management job within the world sugar industry. Only in the last decade or so has any organized effort been made to tell employees and the public something about their operation and profit.

Like business people in other industries, sugar managers have been slow to understand the power of public opinion. Too often the thought is expressed that the less employees and the public know about the operation, the better. However, in a free country where people make the laws and set the tax rates, this is not a correct statement.

Hawaii is a good example. There was practically no organized communication in the sugar industry until almost 100 per cent of the employees were unionized within a few months in 1947. Employees and the public generally did not know anything about the sugar industry. So, when union leaders told everybody that the sugar plantations were making huge profits and could pay almost any wage demands, both the workers and the people as a whole believed them. Why not; they had no other information?

A communication program was hurriedly started, but it is an up-hill fight when the other fellow has already gotten his story told. We also know that communication is important as a means of increasing employee productivity. A speaker before the annual meeting of the U. S. Chamber of Commerce told how effective communication in one of his plants increased production 27 per cent. In fact, some foreign businessmen have called the American system of intimate, first-name, relationship that exists in this country, one of the secrets of high U. S. productivity.

Communication is any means by which we pass ideas, thoughts or impressions to another person. The raising of an eye brow may at times communicate more clearly than a hundred words. However, in business and industry, communication is usually thought of as a planned program to pass information along to others.

The most effective way to pass information is person to person conversation. This is true because in face to face conversation both parties are given the opportunity to participate.

Sugar companies rely upon bulletin boards most frequently for communication purposes. These boards can be effective, but an inspection of boards in many parts of the sugar world indicate that most of them are poorly maintained. These may be worse than nothing in a communication program. It tells workers how uninterested you are in them.

Employee newspapers—usually published monthly or twice-monthly—are the second most used means of communicating with employees in the sugar world.

Letters to employees from the company probably are the next most important means of communication within the industry. Some organizations use a special memo, or "flash bulletin", to distribute to employees on the job. These are especially effective in stopping rumors. Homemade, color and sound, motion pictures have been used effectively by several sugar companies.

There are other less widely used media. Books, slides, booklets, and practically every type of communication medium have been used within the sugar industry from time to time.

A two-year labor contract has been negotiated in the Puerto Rico sugar industry with the Agricultural unions, which are members of the United Packinghouse Workers of America-AFL-CIO.

Also, a two-year agreement has been signed with the factory unions, which belong to the same United Packinghouse union.

Visitors from many of the United States and from many foreign countries take the "grand tour" of the Imperial Sugar Company's refinery, at Sugar Land, Texas.

Guided tours are held every weekday, Monday through Friday, at 10 A.M. and 2 P.M. Visitors may come individually, or in groups.

For safety reasons, groups of children below junior high school level are not permitted.

All visitors hear a talk on the history of Imperial before they set out with an experienced guide who shows them every step in the refining process. Six refinery employees take turns in acting as guides.

Imperial says that the plant tours have made thousands of friends for the company, as well as adding to the public knowledge of the sugar industry.

Holly Sugar Corporation of Colorado Springs, Colo. is reminding the people in each of the rural areas in which they work of the importance of the company in the local economy.

Employees of the company are provided with free envelopes for mailing their letters. The envelopes carry the wording in upper left hand corner, "From an employee of Holly Sugar Corporation".

No pressure is put upon employees to use the envelopes, but about 75 per cent of the workers have asked for them. It was suggested that they be used to pay local bills, or for correspondence. About 20 envelopes were used per permanent employee during the first month.

Cost of the community relations project is relatively low. Envelopes, with the printing, are $3.19 per thousand.

The British West Indies and Hawaii now have social science research centers.

The Institute of Social and Economic Research of University College of the West Indies was established in 1948. This year, the University of Hawaii opened the Psychological Research Center.

These institutions add to the more than 100 such centers of higher education now devoted to the study of human relations. It is estimated that 30,000 scientists are now doing work on human behavior. More than $100 million is annually being devoted to the study of human problems. From these studies have come a number of findings that are adding to the productivity of employees, and more harmonious working conditions.

Unemployment insurance, which provides a worker several weeks pay if he is laid off his job and cannot find other work, is now used in several parts of the world.

In the United States a federal law establishing this type of insurance as part of the government has been in operation some 20 years. However, agricultural workers and certain other types of labor, business and professional classes have not been included.

Hawaii is the first U. S. area to extend this coverage to agricultural workers. The legislation was passed by the Territorial legislature in the spring of this year.

Chiefly affected are workers in sugar and pineapple. Only those employees with 20 or more workers who put in 24 days of work in four consecutive calendar quarters are included. This eliminates most small farmers.

Benefits to workers who are laid off amount to a maximum of $35 a week for up to 20 weeks. This is the same insurance coverage provided non-agricultural employees.

NEW YORK, July 8, 1957:—Although the Department of Agriculture increased the U. S. Quota by 100,000 short tons on June 12th in an attempt to halt the rise in domestic sugar prices, refined sugar prices subsequently were advanced and firmness continued in spot raw sugar prices. Then, on July 5th, the quota was increased by another 200,000 tons, and following that the spot raw sugar price declined 10¢ to $6.00 per 100 pounds, B. W. Dyer & Co., Sugar Economists & Brokers, report.

The previous strength in the domestic market apparently had been caused by the reluctance of sellers to offer raw sugar to the U. S. while the world price is at a premium. Moreover, adverse weather in Puerto Rico has hurt production to the extent that it will have a deficit of at least 200,000 tons in its U. S. quota. However, the Department of Agriculture has raised the U. S. quota to 9,300,000 tons and has prorated about 189,000 tons of the Puerto Rican deficit. On June 14th, the quota regulation was amended so that any offshore raw sugar quota may be completely filled at any time. Prior to that action the following portions of the quotas could not be filled before November 1, 1957: Cuba 100,000 ton; Dominican Republic, Mexico and Peru 16,000 tons each; Hawaii 50,000 tons.

Cane refiners and beet processors generally advanced their prices $0.15 in the Midwest and the Northeast. The new prices, which range from $9.00 per 100 pounds in Chicago to $9.25 in the Northeast, became effective at the close of business June 14th. In the Far West, prices were increased $0.15 in California (cane to $9.15 for industrial users and $9.25 for other buyers; beet to $9.15 to all the trade) effective June 28th. In the Northwest, the increase in basic price was $0.05 (cane to $9.05, beet to $8.95) at the close of business June 21st, but orders were accepted at the old prices for shipment by July 31st.

In anticipation of the price advance, and because of warm weather, refined sugar distribution has improved noticeably in recent weeks. Cumulative total deliveries, which on April 27th were running 249,000 tons behind those of the corresponding period in 1956, were only 61,000 tons behind on June 29th.

The United States Department of Agriculture has asked for further comment on Sugar Act definitions. Although the dividing lines between raw and direct-consumption sugar at 99° remains as proposed earlier, changes include: (1) Eliminating the variability allowance of 0.20% sugar content; (2) revising requirements for weighing, sampling, testing and evaluating units of sugar to conform more closely with trade practices; (3) relating the unit of sugar to the quantity covered by a single "sugar quota clearance record" rather than a single manifest bill of loading.

World sugar prices advanced from 5.85¢ per pound early in June to 6.28¢ on June 24th, but then declined, and were 5.90¢ early on July 8th.

The Cuban Institute on June 20th revised upward its 1957 production estimate to 5,515,000 Spanish long tons, and allocated 2,193,955 tons to the U. S. Free Quota; 39,451 to U. S. Retained; 1,891,779 to Other Countries Free; 1,030,000 Institute Sales; and 359,815 Local Consumption. Cuban production through June 30th totalled 5,468,012 Spanish long tons. As only 3 mills are still grinding, it appears that the final production estimate of the Institute may be slightly high.

Cuban sales to the world market (outside the U. S.) through June 30th were 2,431,909 English long tons (2,723,738 short tons) according to a survey by Willett & Gray, Inc. compared with 1,884,184 tons (2,110,286 short tons) to that date last year. Thus, it apepars that only slightly more than 300,000 Spanish long tons of Cuban sugar remain to be sold to the world market during the balance of the year.

F. O. Licht on July 1st made a further slight downward revision in 1957/58 European sugar beet area estimates. Western Europe is now placed at 1,664,000 hectares, compared with the previous estimate of 1,680,000 hectares and 1,667,000 last year. Europe, excluding Russia, is estimated at 2,755,000 hectares vs. 2,818,000 previously and 2,779,000 last year. If average yields during the 1953-1956 period are obtained, this could result in a 1957/58 increase in sugar production in Europe, excluding Russia, of more than 1,000,000 metric tons, raw value, over that of last season, B. W. Dyer & Company estimates.

Sugar Prices, July 8, 1957

Ex Duty Raw Sugar New York	6.00
Average No. 6 Raw Sugar January 2-July 8	5.79
Refined Sugar Gross, New York	9.25
No. 4 Raw Sugar (f.o.b.) Cuba	5.90
Average No. 4 Raw Sugar January 2-July 8	6.07

Futures Prices	*Contract No. 6*	*Contract No. 4*
September, 1957	6.04	5.89
October, 1957	..	5.88
November, 1957	6.02	..
March, 1958	5.78	4.54
May, 1958	..	4.52
July, 1958	..	4.51
September, 1958	5.75	4.50

Puerto Rican Deficit 235,816 Tons

The general economy of the island suffered a loss of $33,000,000 as a result of the disaster in this last campaign. The 32 sugar mills completed their operations with an average yield of 11.234 per cent sucrose and a total production of 978,522 tons of sugar, the lowest in the last eleven years. This is the first time in 23 years that the island has been unable to cover its marketing quota. In spite of the carryover from the previous campaign which amounted to 37,498 tons, plus the present production of 978,522 tons, there was a deficit of 235,816 tons to cover the total marketing quota. This shortage in production which was caused by the hurricane of last August and by a subsequent period of drought, means a loss of $33,000,000 to the island's geenral economy.

The Commonwealth has begun a program for improving the disastrous situation that has afflicted the island's sugar industry resulting from last August's hurricane and the prolonged drouth that has reduced production by more than 25%. The program is mainly directed toward promoting the planting of improved varieties of cane and stimu-

lating the use of modern agricultural machinery to reduce costs, and in general the improvement of production. Among the measures that have been put into effect are the following: subsidies to the colonos for planting superior kinds of cane; economic assistance for the purchase of fertilizers; establishment of agricultural machinery "centers" to familiarize the colonos with better methods of preparing the soil; allocation of additional funds to the Land Authority and the Agricultural Experiment Station for the rapid propagation of outstanding cane varieties for planting purposes; and liberal additional allocation of funds for technological research for improving the sugar industry in general.

The Board of Directors of the Puerto Rican Association of Sugar Producers has had an interview with Roberto Sauchez Vilella, head of the Bureau of Internal Affairs, to recommend additional measures for rehabilitation, including a suggestion that the President of the United States be requested to declare Puerto Rico a disaster zone in respect of its cane industry; requests were also made for elimination of the production tax on sugars and molasses, unification and modernization of labor legislation, and synchronizing and coordination of the various governmental agencies that participate in regulation of the sugar industry.

The drouth that for more than six months has affected the whole island and has caused enormous losses to agriculture and the animal industry, has at last been ended by the heavy rains that fell during June. Reports indicate that the rains were sufficiently copious and well distributed throughout the island, and have notably improved the condition of the current cane, coffee, and minor crops. Now that the rainy season, which usually begins in June, has come, the colonos are displaying unusual activity in land preparation and new plantings in an effort to recuperate from the disastrous effects of the cyclone and the drouth. The Bureau of Agricultural Stabilization and Conservation is making a study of the losses of cane production suffered by individual colonos, on which to base compensation payments under the Sugar Law.

Audrey In Louisiana

The Louisana sugar district was sideswiped by Hurricane Audrey on June 27 but fortunately the cane crop seems to have escaped with only slight damage. The hurricane struck the extreme western Louisiana coast with almost unbelievable fury and the high winds and accompaning twenty foot tidal wave destroyed practically everything in its path in the lowlands of Cameron Parish.

Cameron Parish is a considerable distance west of the Louisiana sugar district and, as stated above, the cane fields felt only the fringe winds of the storm. This report is being written on July 2nd and it is too soon following the big blow to tell accurately what damage has occurred in the cane fields but we feel quite sure when all reports are in that the lasting results of the storm will be negligible from a sugar production standpoint.

June hurricanes are always a great surprise to the people of this part of the world. They more or less expect some anxiety during the months of August and September and the early part of October when big storms are continually brewing in the Caribbean and the Gulf of Mexico but these June storms just are not expected. A check with the New Orleans Weather Bureau has shown that since 1886 hurricanes have formed on only ten occasions in the Gulf of Mexico during the month of June and that only three of these disturbances have struck the Louisiana coast; in 1886, in 1912 and in 1934. The 1886 hurricane is said to have taken a similar course to the one followed by Audrey.

The Sugar Division of U. S. D. A. will hold its yearly Proportionate Shares acreage hearing in New Orleans on July 9th, 1957, with Mr. Lawrence Myers, Director of the Sugar Division, scheduled to be the presiding officer. In an interview prior to the acreage hearing, Gilbert J. Durbin, General Manager of the American Sugar Cane League, had the following to say regarding the acreage outlook in Louisiana for 1958.

"The sugar marketing quota for the mainland cane area, comprising Louisiana and Florida, is 628,424 tons for this year. Last year's amendments to the Sugar Act are responsible for the addition of 128,424 tons to the area's 500,000 ton quota under the old Act. The increase in marketing quota permitted a 15 per cent increase in the area's cane acreage this year.

"Yields of sugar per acre in Louisiana and Florida have increased tremendously the last few years. Even though the area's acreage is still about 17 per cent below normal this year, there is a good chance the sugar production will equal the 628,424 ton marketing quota.

"At the moment, it appears that the carryover of sugar in Louisiana and Florida at the end of this year will be as large as it was at the end of last year, or about twice the amount considered as normal several years ago. Of course, things could happen to change the present outlook.

"There is a possibility, if not a probability, that the mainland cane area's quota will be further increased this year. That could occur in either of two ways. If some area cannot fill its sugar marketing quota, the unfilled balance will be reallocated to Louisiana, Florida, and other areas which have the sugar to sell. The U. S. D. A. may find it necessary to further increase the total sugar quota for the U. S., in which event Louisiana and Florida will get additional quota.

"In view of the many uncertainties in the present sugar situation, it seems the U. S. D. A. should tell growers that another look will be given the situation about next January to see if the 1958 permitted acreage announced this fall can be increased. Most growers usually wait until spring to plow out stubble cane they do not plan to keep another year. This year, it will probably be best for no growers to plow out stubble in the fall. If they hold it until spring, they may be able to keep part or all of it for another year. That is a long-shot chance but it does not cost anything to take it."

C. B. Singletary, K. G. Coulon and G. L. Robertson, of the Louisiana State University Experiment Station, have completed an experiment to determine the value of raw sugar as a feed for fattening pigs. The experiment was made possible through a grant-in-aid by the American Sugar Cane League. The experimenters have concluded that:

(1) Pigs fed from sixty to two hundred pounds utilized a ration containing up to thirty per cent raw sugar with satisfactory results from the standpoint of gain and feed efficiency.

(2) The raw sugar levels did not affect the thickness of backfat.

(3) The high percentage of Choice No. 2 carcasses was principally due to an inheritable trait and not the rations fed.

(4) Carcass quality and cut out values were not significantly influenced by the levels of sugar fed in this experiment.

In this connection, the attorney of the American Sugar Cane League has received the following letter from Thomas H. Allen, Deputy Director of the Sugar Division, which is self-explanatory:

"This is in reply to your letter of June 5, 1957 in which you raised two specific questions with regard to the approval of conditional payments to producers under the Sugar Act of 1948, as amended.

"The two questions raised are: 'If sugar which has been processed from proportionate share sugar cane should be ultimately used for livestock feed or for the production of livestock feed, (a) would such use affect the conditional payment to which the producer of such sugar cane is otherwise entitled, under Title III of the Sugar Act of 1948, as amended? and (b) would such use affect the determination of the proportionate share for the producer's farm in subsequent years, under Section 302 of the Sugar Act?'

"You are correct in your assumption that neither of the situations outlined in the above will affect the conditional payment of a producer or affect the establishment of the proportionate share for such producer in future years. On the other hand, sugar produced for livestock feed from non-proportionate share sugarcane is neither eligible for a conditional payment nor for inclusion in the marketing history for a farm."

The receipts of offshore raws at New Orleans during the month of June were as follows: 19,454 tons of Cubas and 8,000 tons of Philippines to American; 29,796 tons of

Cubas and 3,099 tons of Mexicos to National; 22,652 tons of Cubas to Supreme; 16,330 tons of Cubas to Colonial; 11,513 tons of Cubas to Henderson; 2,000 tons of Puerto Ricos to Industrial Sugars, St. Louis, and 1,163 tons of Mexican raws to Liquid Sugar, Indianapolis.

Individual Cuban Records

The 1957 Campaign had almost terminated as of June 15th when only six mills had not finished grinding. They were Tinguaro, San Agustin (R), Chaparra, Delicias, Miranda, and Tanamo mills.

The leading producer with the campaign practically over is Moron which produced 1,313,571 sacks of 250 lbs. apiece. Next in line were Manati, 1,007,703 sacks of 250 lbs.; Jaronu, 990,480, Vertientes, 979,503, San German, 964,819, and Stewart, 931,451.

Best yields base 96° were given at the following mills; Santa Isabel, 15.33%; Santa Regina, 14.63%; Soledad, 14.52%; Hormiguero 14.50%; and Isabel (G), 14.44%.

Moron also produced the most gallons of molasses having terminated the '57 Campaign with a total output of 6,868,290 gals. The Manati mill followed closely with a production of 5,802,757 gals., Jaronu, 5,652,895 gals., Stewart, 5,189,995 gals., and San German, 5,128,540 gals.

Part of their declaration reads "as is known, the sugar industry in Cuba . . . uses some 44,000,000 sacks yearly . . . the industry pays approximately $17,400.00 in taxes. The 5% tax on sacks that are re-exported in exporting Cuban sugar adds up to another $23,420.00 . . . therefore, we can estimate that about $40,860.00 are paid annually by taxes."

They went on to ask for the adoption of the bulk shipment method as a remedy for these overly-high tariffs.

Mexico's Record Crop

Production of Mexican sugar in the 1956-57 cycle reached a figure of 1,005,116 tons, according to the National Union of Sugar Producers. This was the figure to June 23rd, with grinding of cane for the final week expected to boost this figure slightly higher. Major mills (of 71 operating) have completed their cycles.

Mexico is harvesting a record-breaking sugar crop in the 1956-57 cycle drawing to a close at the end of June.

As a matter of fact, as a result of last year's production, mills inaugurated modernization programs and cane growers improved cultivation methods. There's still a long road ahead to ultimate perfection, but industry leaders and government officials are striving for it.

This year's exports to the United States will hit 50,000 tons, according to the Association and sugar executives. While it is reported no sugar as yet has gone out of Mexico for U. S. ports, a spokesman said this will not hamper export figures when shipments finally begin. He added that there is no set date for Mexico to complete its U. S. sugar quota.

According to Jose Maria Martinez, head of the sugar industry's labor union, production increases can be boosted in the republic by initiating the cycle in November of each year and not in January.

The labor leader revealed that capacity of Mexican mills (with current facilities) is 1,300,000 metric tons. This figure is constantly rising as mills plan expansions and new plants are created.

Nacional Financiera (this is the semi-official federal credit institution) has already embarked on a study of natural and economic possibilities of the Huasteca region (San Luis Potosi area). This is prelude to erection of four new mills with an investment of 70 million pesos (5,600,000 dollars). The four new plants will boost Mexican annual production by approximately 150,000 to 200,000 metric tons.

Cuban Production To June 15th

	Sacks (250 lbs.)	*Sp. Long Tons*	*Gals. Molasses*
Pinar Del Rio	**1,739,525**	**194,143**	**8,790,415**
Habana	**3,963,101**	**442,310**	**22,477,379**
Matanzas	**5,739,330**	**640,550**	**30,172,654**
Las Villas	**9,725,872**	**1,085,477**	**47,897,683**
Camaguey	**12,765,818**	**1,424,757**	**65,550,133**
Oriente	**14,851,951**	**1,657,584**	**74,470,805**
Totals	**48,785,597**	**5,444,821**	**249,359,069**

The month of June started with a series of incendiary attacks on cane fields, and other vandalistic acts, which ended in the almost total destruction of the Tinguaro mill and losses of $12,000 to the Andorra mill where fire destroyed 1,000 sacks of refined sugar and damaged 7,000 others.

The Minister of Hacienda, Dr. Garcia Reyneri, has dictated a law-decree in conformity to the petition made by the Hacendado Association empowering them to maintain in deposit, subject to return, the excess over $3,479,967.45 due the government for the local consumption quota of the present year.

The excess is due to the production being over the estimated amount of 5,150,000 Sp. tons.

In an interesting declaration the Hacendado Association has appealed to Dr. Reyneri, Minister of Hacienda, to establish bulk shipments as the duty of jute sacks has been increased, and to make it possible to give the lowest export price.

U. S. Sugar Beet Production

Farmers in 22 states produced a record yield of 13,010,000 tons of sugar beets from 785,000 acres for an all-time high average of 16.6 tons per acre, the Crop Reporting Board of the Department of Agriculture disclosed this week.

The 1956-57 crop topped the previous average of 16.5 tons per acre set in 1955, the USDA said in its June Crop Production report.

Colorado again led the Rocky Mt. states in production with 1,893,000 tons of beets grown on 120,700 acres for an average yield of 15.7 tons per acre. California topped the nation with 3,517,000 tons produced.

National average of payments to growers for the 1956-57 crop was $14.28 per ton of sugar beets, an increase of $.77 per ton over 1955, the report showed.

Agriculturists for American Crystal, Great Western and Holly Sugar, predict another record crop for 1957-58. Excellent Spring growing conditions indicate a big harvest this Fall. Acreage allotments for the state have been boosted 20,000 over 1956 to 147,053 acres.

Hawaii's Quota Up Again

Following our report last month (page 32, July 1957 *Sug. y Azuc.*) of Hawaii's all-time high quota, another boost has been announced. Hawaii's total sugar quota is now 1,222,641 tons, highest in history. The new quota is the result of a 200,000-ton hike in the United States consumption estimate announced on July 5th by the Secretary of Agriculture as discussed at the beginning of these notes.

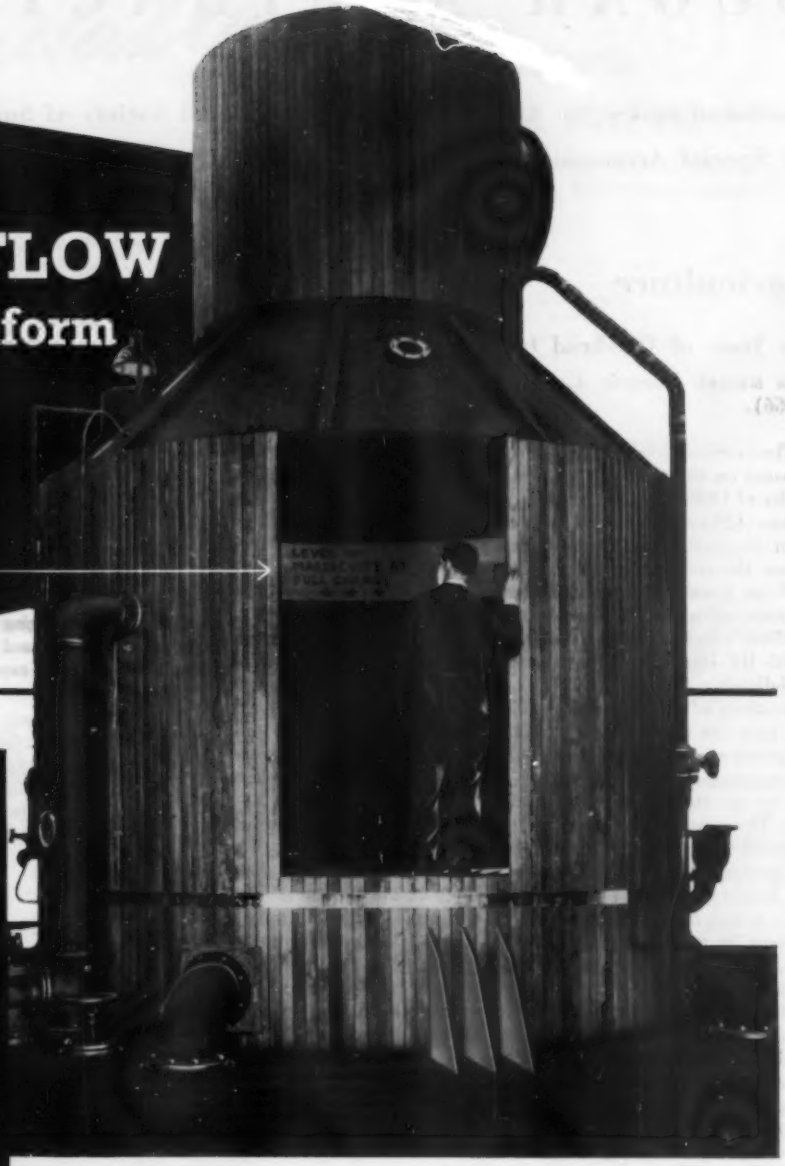
Hawaii's share in the 200,000-ton increase was 32,858 tons. The quota of 1,222,641 breaks down into 1,172,641 tons for mainland delivery and 50,000 tons for local consumption.

Hawaii's sugar industry is expected to place more emphasis on basic research—in addition to its already extensive program of applied research—as a result of extended study trips by two of its leading scientists. Also slated to come up are further studies on the use of the diffusion process in extracting sugar from cane instead of by crushing it in a mill.

Dr. L. D. Baver, director of the Hawaiian Sugar Planters' Association Experiment Station, and Dr. J. H. Payne, head of its sugar technology department, have just returned from trips to the Mainland, Europe and around the world. Major purpose of the trips, said Dr. Baver, was "to get new ideas in conjunction with our research program."

CENTRE FLOW

for rapid, uniform circulation



The working head of Massecuite in the outstanding Fletcher Centre Flow Pan is lower than that usually associated with this type of equipment. This feature, combined with large downtake and even steam distribution, provides rapid circulation.

The Fletcher Centre Flow Pan has no zone in which the movement of Massecuite is sluggish because the Calandria and body are the same diameter. This ensures well-formed crystals, with the minimum of twins and conglomerates, and the total absence of smear and false grain.

FLETCHER

CENTRE FLOW PANS

Complete plant for the sugar industry

CANE KNIFE SETS · MAXWELL SHREDDERS · FLETCHER MILLS · "ATLAS" MILL ROLLER METAL · JUICE HEATERS · MAXWELL BOULOGNE LIQUID SCALES · FORTIER CLARIFIERS · SEALED DOWNTAKE EVAPORATORS · FLETCHER CRYSTALLIZERS · AMARILLA ROTARY DISPLACEMENT PUMPS FOR MASSECUITE & VISCOUS LIQUIDS.

GEORGE FLETCHER & CO LTD
MASSON WORKS LITCHURCH LANE DERBY ENGLAND
Telegrams: 'AMARILLA DERBY' Telephone: DERBY 45817

SUGAR ABSTRACTS

Published under the Auspices of the International Society of Sugar Cane Technologists by Special Arrangement with SUGAR y AZUCAR—Dr. O. W. Willcox, Technical Editor

Agriculture

Six Years of Overhead Irrigation

ANIS MACARI, *Memoria Associación Técnicos Azucareros Cuba* (1956).

The overhead irrigation system at La Joya plantation in Mexico is based on 26 deep wells, each equipped with a pump with a capacity of 1400-1600 gals/min. These pumps are driven by electric motors (20 to 30 HP) fed with current from the factory. Water from the wells is discharged into concrete-lined ditches which follow the contours of the irregular terrain.

Water is taken from the ditches and applied on the fields by 15 spraying outfits. Each outfit is mounted on an iron-wheeled platform which travels on a track alongside the ditch and carries an 85 HP Diesel engine coupled to a centrifugal pump capable of delivering 1700 gpm. Each of the 15 outfits is provided with 80 sections of aluminum pipe, 6 in. in diameter and 20 ft. long; one man can easily carry four of these pipes.

Spraying operations along the ditch are divided into sections corresponding to 40 lengths of pipe (800 ft.) In each section are set up eight spray towers, each capable of delivering 350 gpm. Three men are required, one to tend the pump on the movable platform and two laborers to carry and connect the piping for the sections. Each spray tower carries three nozzles; the upper one delivers a stream that sprays a radius of 115 ft., the middle one a radius between 75 and 100 ft., and the lower one a radius of about 50 ft. The area sprinkled along one section is about 2.5 acres. To apply 3-acre inches of water generally requires three hours, depending on the absorbing capacity of the soil. In the meantime, preparations have been made for moving the platform along the ditch to the next section. The height of the sprinklers is adjustable to correspond to the height of the cane to be irrigated.

Up to seven sections can be covered in a day of 24 hours. With 15 outfits in operation more than 120 acres per day can be irrigated. The cost of applying one acre-inch of water is said to be $1.00 Mexican currency ($0.08 U.S.). The average increase of sugar yield during the six years of overhead irrigation, including plant cane and 6th, 7th, and 8th ratoons, was 2.5 tons per acre; plant crops have given increases of four tons. The total area under irrigation is 1800 acres.

■

Comparison of Different Systems of Cane Planting

K. N. TUNG, *Report Taiwan Sugar Cane Experiment Station*, No. 14, pp. 36-46 (1956).

In a comparative study on different planting systems adaptable to mechanized cultivation of sugarcane, there were four treatments: ridge planting, level planting, single-row furrow planting (used as a check), and double-row furrow planting. Eight experiments in six locations were conducted during 1953-54 and 1954-1955.

Owing to the fact that the autumn planting was done, as always in the wet season, the germination percentage of ridge and level planting systems were as satisfactory as single- and double-row furrows planting.

In the ridge and level planting plots, no "earthing up" was practiced during the growing season; in these plantings the cane was more susceptible to wind damage, resulting in early lodging of cane stalks, large number of dead stalks, and less millable stalks than in the single- and double-row furrow planting which received "earthing up."

Average length of millable cane of the ridge and level planting was shorter, and average weight per stalk was lighter than that of the single- and double-row furrow plantings. Also, cane yield is significantly lower with the first two treatments.

In places where groundwater table is high or drainage not good, the yield of ridging and level-planting plots is little different from the single- and double-row planting systems.

Results of the eight experiments all agree in one point, that is, the difference of cane yield between the single-row furrow planting system (spacing between rows 48″ or 1.22 m). and double-row furrow planting system (spacing between rows 54″ or 1.37 m.) was not significant. For convenience of tractor operations in the field, the widening of the space between cane rows to at least 54″ is necessary without much chance that yield would be affected.

■

Sugar Cane Varieties Do "Run Out"

Cane Growers' Quarterly Bulletin, Vol. 20, No. 4, p. 139 (1957).

In the sugar cane industries of all countries it is commonly observed that existing varieties of this plant gradually decline in productivity until their further culture becomes unprofitable. To get around this situation it is necessary to maintain a program of breeding new varieties to take the place of those that have become useless. In their beginning the new varieties show fresh vigor for growth and yield but in their turn they decline or "run out" after five or ten years of culture, and have to be discarded and substituted by new ones developed by the cane breeders. It used to be contended that the sugar cane, like other crops that are propagated asexually (by cuttings) should never run out; and that the apparent running out is not due to gradual loss of an inbred genetic character, but rather that in course of time the old variety becomes weakened by disease until it finally does not have enough vitality to carry its good character through successive cycles of crops. This theory seemed to be confirmed by the discovery of a disease that has been found to occur in practically every cane growing country, namely the ratoon stunting disease. It was later found that this disease could be cured (by hot water treatment) and disease-free planting material could be obtained for comparison of old and new varieties under equal terms.

In a large-scale variety trial where new varieties were represented by N.Co.310, Vesta, C.P. 29/116, Q. 50 and Q. 47 were grown alongside old favorites like POJ 2878, Co. 290, POJ 2725, Q. 813, M. 189 and M 1900. Seedling, the results left no doubt

☆ Dependable—

HIGH SPEED
WATER DRIVE

The most modern high-speed hydraulic centrifugal with the following outstanding features:

Variable acceleration.
Variable top speed up to 1800 r.p.m.
Variable duty cycle.
Variable torque for discharging.
Water-cooled long-life brakes.
Controlled-entry discharging ploughs.
Positive overspeed prevention.
Reduced maintenance costs.
Robust construction throughout.

Six 42" x 24" high-speed water-driven centrifugals —1500 r.p.m.

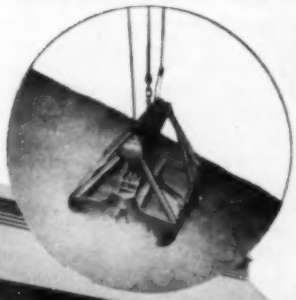
Patent ball-control spindle head.
Fixed speed for mechanical dischargers.
Automatic timer control of washing, steaming and braking.

WATSON LAIDLAW
AND COMPANY LIMITED

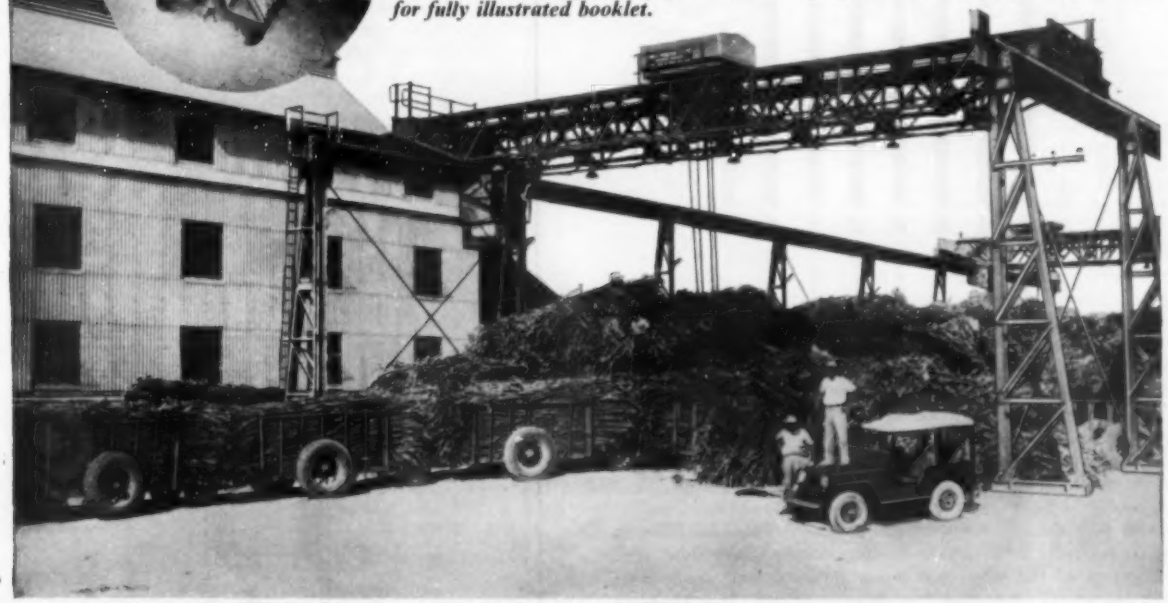
Designers and Manufacturers of Centrifugal Machines

98 LAIDLAW STREET, GLASGOW, C. 5

***Telephone:* SOUTH 2545** ***Telegrams:* "FUGAL" GLASGOW**



HENDERSON ***overhead travelling cranes for sugar plantations.*** Handling by Henderson is the safest way to high efficiency and economy with reliability in the sugar industry. These cranes are employed in the most modern factories for unloading the sugar cane and feeding the Factory. They are in continuous operation for about six months during the sugar crop. For bulk handling of raw sugar in stores Henderson Overhead Cranes operating special treble rope grabs are widely used. ***Please send for fully illustrated booklet.***



JOHN M. HENDERSON AND COMPANY LIMITED KING'S WORKS ABERDEEN *TELE: CENTRAL 24262 (3 lines) GRAMS: CRANES ABERDEEN*

that the modern canes are really superior in genetic quality to the ones that were grown twenty or more years ago, and that "running out" is really due to a natural decay of vital vigor.

■

Beet Agriculture

Liming of the Soil in Relation to the Growth of Sugar Beets

J. LACHOWSKI, *Polish Technical Abstracts 1955*, p. 103.

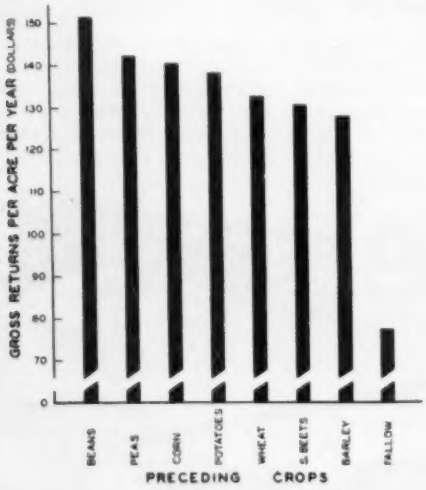
New research has confirmed the fact that, regardless of the kind or nature of the soil and independently of climatic surroundings, an acid or an alkaline reaction of the soil has a depressive influence on the yield of sugar beets. Experience shows that the highest yield of roots and sugar are obtained from soils with a neutral reaction. Of the two conditions, an alkaline reaction is the least harmful (up to pH 8.5). Correction of the acid condition often increases the yields as much as 10%.

■

Effects of Preceding Crops on Sugar Beets

S. DUBETZ, C. C. RUSSEL, AND K. W. HILL, *Journal of the American Society of Sugar Beet Technologists*, Vol. 9, pp. 354-366 (1957).

Agriculturists are in agreement that where different kinds of crops are grown each year on the same farm these crops should be rotated, so that each crop may take its turn on the various



fields. Such rotations are generally practiced in all beet growing countries, but there is a lack of information on how the sugar beet would be affected by the crop which preceded it in the rotation. This information was obtained by a field experiment arranged under the following plan:

Seven crops: peas, corn, potatoes, barley, spring wheat, sugar beets, and field beans were grown in contiguous parallel strips. The next year these crops were grown on the same land but in strips transversely across the preceding strips; in the third year the direction of the strips was again reversed, and again until two cycles of the operation had been repeated, and all plots were irrigated. The fertility of the soil was maintained by yearly applications of fertilizer. The average results, in dollar values, are shown in the accompanying diagram. The crop which most advantageously preceded beets is field beans, as would be expected from the fact that the legumes increase the nitrogen of the soil; potatoes and peas are the next best. Barley and sugar beets were the least effective preceding crops. Summer fallow was distinctly not justified.

■

Factory Technology

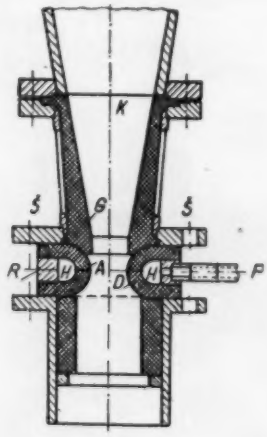
Use of Hydrocyclones in the Sugar Industry

W. V. PROSKOWETZ, Zucker, Vol. 10, No. 5, pp. 102-105 (1957).

Use of the hydrocyclones for cleaning, concentrating, and classifying of solid substances in water suspensions is common in many industries, such as the coal, ore mining, and clay industries and also for removal of solid impurities from waste waters. Attempts have been made to use it in sugar factories for removal of sand and grit from milk of lime, and to remove solids suspended in beet wash waters, but previous designs for this purpose have been unsuccessful.

A hydrocyclone consists of a cylindrical and a conical part (see sketch). The fluid from which suspended matter is to be removed is introduced under pressure of water entering through a pipe (not shown) tangential with the upper cylindrical part. The rapid flow of the entering water imparts a centrifugal motion to the particles of solids which gradually work downward and pass out with some of the water through the lower exit while the clarified fluid passes out through an outlet pipe (also not shown) near the top. Success with this apparatus depends on accurate adjustment of the diameter of the throat of the outlet to the nature of the suspension. In the figure, K is the conical part, D a rubber ring having a horeshoe cross section, R is a "wedge-ring" which acts to expand or contract the flaps of the ring D; SS are fastening screws, and H is a hollow space the volume of which can be adjusted by compressed air at P. G is a rubber lining for the cone, the inner diameter of which can be widened or narrowed by pressure from P. This system was developed by Hungarian technologists who applied it first to the cleaning of milk of lime which contained 2.12 gr/l of CaO and 2.65 gr/l of sand. The sand was completely (100%) removed along with not more than 3.5% of the milk of lime.

They also applied it as a substitute for filter presses for cleaning turbid juice from the second carbonation. This juice



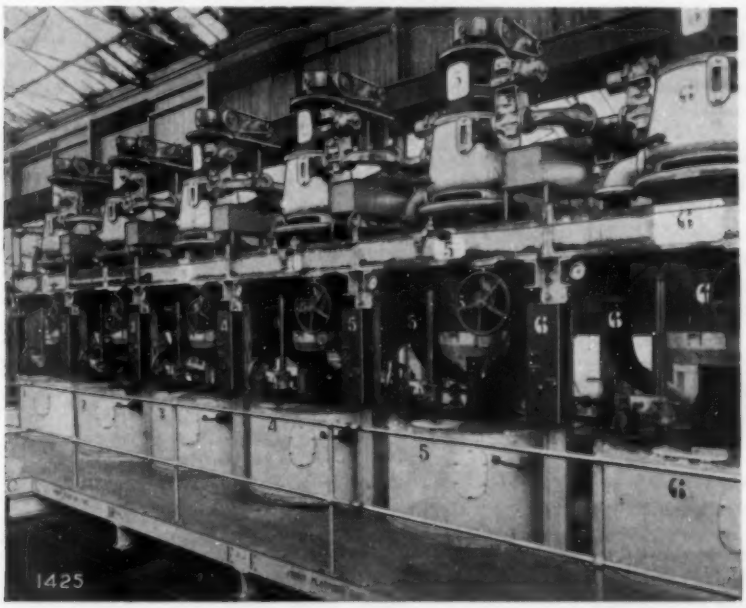
PACKAGE MORE SALES

Put more sales in your packaged product—
specify bags by Percy Kent.
PK's fresh, creative bag designs
and high technical standards of bag printing
dominate the displays in any dealer's store.

SINCE 1885

MULTIWALLS • COTTONS • BURLAPS
PERCY KENT BAG COMPANY, INC.
KANSAS CITY • MINNEAPOLIS • OKLAHOMA CITY
CHICAGO • BUFFALO • NEW YORK

Scratchboard drawing of our Kansas City plant . . . an excellent technique for bag printing. Do you like it?



WATER DRIVEN CENTRIFUGALS

This battery of semi-automatic Water Driven Centrifugals has a top speed of 1500 r.p.m. Each centrifugal is equipped with an auxiliary electric motor with gearbox and automatic clutch to give a ploughing speed of 50 r.p.m. The centrifugals are fitted with water cooled brakes, mechanical unloaders, power operated mixer valves, power operated drip chutes, and power operated water valves. Water washing is automatic. The battery is complete with air compressor and Blanchard type masseculte pre-heaters in the mixer.

POTT. CASSELS & WILLIAMSON

MOTHERWELL • LANARKSHIRE • SCOTLAND

Cable. POTT. MOTHERWELL

PC&W

...it all boils down to Know-How!

G-B has the experience, the personnel, the modern facilities to solve your sugar mill evaporation problem. Our engineering team is available for consultation at no obligation.

Two G-B vacuum pans boiling sugar in a large Hawaiian sugar mill.

GB GOSLIN-BIRMINGHAM MANUFACTURING CO., INC. BIRMINGHAM • ALABAMA

had a density of 12.5 Bg. and solid impurities amounting to 1 to 1.5 gr/l. The clarifying effect on the juice was 98%. About 4.1% of the whole juice came out as a concentrated suspension containing 31.0 gr/l of solids, which were returned to process. The purity of the treated second carbonation juice was raised from 0.5 to 1.0%. On the basis of these results the Sarkad factory installed hydrocyclones with capacities sufficient to clean its milk of lime, and its factory waste waters, and dispensed with second carbonation filters.

■

Ash in Sugar; Its Effective Reduction

J. M. LOPEZ-ONA, JR., *Memoria Asociación Técnicos Azucareros Cuba* (1956).

At a Cuban cane sugar factory with attached refinery the average ash content of the refined sugar was between 0.03% and 0.05%. The cane at this factory is produced under irrigation and with use of fertilizers. The refining process in use up to 1954 consisted of treatment with Sucro-Blanc and lime in two stages, with addition of a small amount of vegetable carbon in the second treatment. In the 1955 campaign, variations of this method, such as alterations in pH of the liquors, quantity of phosphate applied, temperature of defecation, etc., were made in the hope of reducing % ash in the refined sugar. The first result in this direction was obtained by changing the system from Sucro-Blanc—Carbon—lime to Sucro-Blanc—caustic soda, the soda being used for alkalizing the affined sugar melts. This reduced the ash of the refined sugar to 0.035. Then the system was changed to carbon—soda; in this case Sucro-Blanc was dispensed with, and the ash in the sugar fell to 0.024%. This indicated that lime salts were the source of the ash. Finally, after a laboratory study of various proportions of the other factors such as lime phosphate, caustic soda and carbon (the only active factors used) the ash was brought down to 0.006%, which held throughout the 1956 campaign.

The results of this experience in the refinery suggested extension of the idea to the practice of juice clarification with the object of reducing the ash content of raw sugar. The crude juice was treated as usual in the cold with lime to a pH of 7.2-7.4 and in a separate tank the alkalization (also in the cold) was completed with enough caustic soda to obtain a final clarification pH of 6.9-7.2. The cost of the soda treatment is about two cents per bag of 325 lbs. Unalkalized juice contained 600 p.p.m. of carbonate of lime; juice alkalized with lime 320 p.p.m. and juice alkalized with caustic soda 200 p.p.m.

■

Loss of Sucrose by Exothermal Reactions in Stored Final Molasses

GUSTAVE T. REICH, *Memoria Asociación Técnicos Azucareros Cuba* (1956).

In a critical review of the circumstances attending the loss, by spontaneous decomposition, of 1,740,000 gallons of final molasses stored in two tanks at Central Fajardo in Puerto Rico, the known facts are listed as follows:

The temperature in Tank 2 rose to a maximum of 145°F, and in Tank 3 to about 300°F while the air temperature was 85-95°F in Tank 2. Sucrose entered into chemical combination only with non-sugars and there was no indication that any part of the sucrose was inverted. The rise in temperature in this tank took place over a period of several days. In Tank 3, sucrose not only combined with non-sugar but a part of it was inverted. The main difference here is that at some unspecified temperature the reaction in Tank 3 was greatly accelerated and the action was over in a short time. In the end, the sucrose content of molasses remaining in Tank 2 had fallen from 35.18% to 26.68% and in Tank 3 to 0.48%.

There was an increase of volatile organic acids, which probably was the first cause of the decomposition reactions. Analyses showed that there was no increase in unfermentable sugars, though the pH was low. There was a decrease of Brix of the molasses remaining in Tank 2, which indicates that one of the decomposition products in this tank was water. The residual mass in Tank 2 was completely soluable, whereas 17% of the residue in Tank 3 was insoluble, and this insoluble material contained no free carbon. The different actions in the two tanks suggests that the source of the decomposition was inherent in the natures of the molasses in the two receptacles, which might have been acquired during transportation from factory to storage.

■

Books

South African Sugar Year Book, 1955-56

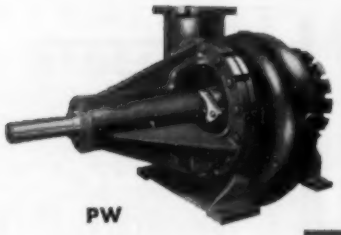
Published 1956 by South African Sugar Journal. Durban. South Africa.

The 26th edition of this excellent reference book appears again in an enlarged form. In addition to the usual full reports reflecting the activities of the South African sugar industry, the book contains a number of informative articles about this flourishing industry.

in Puerto Rico...

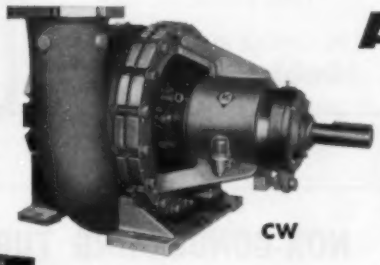
80%

of the pumps used in sugar mills are built by Allis-Chalmers



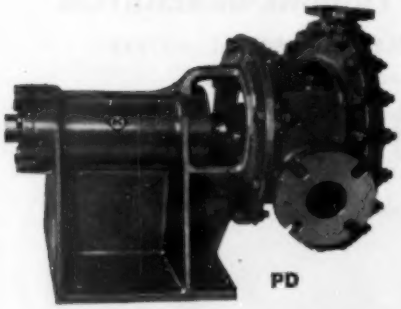
PW

The PW Pump for raw juice, maceration juice; for all installations where mechanical loading presents an abrasion problem . . . Handles 2 to 4% of sand or grit.



CW

The CW Pump for cachaza, "the pump killer," has a remarkable record for efficiency and minimum maintenance in this difficult service.



PD

The PD Pump used for syrup, milk of lime or juice; leakproof because it includes the *Equiseal* stuffing box and packing on the suction side.

Yes, eight out of every ten centrifugal pumps applied in Puerto Rico's vast sugar industry have been supplied by Allis-Chalmers. In fact, all of the island's million ton annual production goes through an A-C pump at some stage of the process. Such overwhelming preference is proof that sugar mill operators buy these pumps because they are built to operate continuously under the rigorous service demands of sugar production.

Allis-Chalmers will custom-assemble a pump from a wide range of metals and alloys designed to meet sugar mill needs. Contact your distributor for information or write Allis-Chalmers, Industries Group, Export Department, Milwaukee 1, Wisconsin, U.S.A.

Equiseal is an Allis-Chalmers trademark.

ALLIS-CHALMERS

A-5400

ALLIS-CHALMERS DISTRIBUTORS

*Indicates firms which also sell some Tractor Division products.

These firms distribute equipment of the Company's Industrial, Power and Electrical, and General Product Divisions. Distributors of Tractor Group products also are located in principal cities.

ARGENTINA, Buenos Aires — Allis-Chalmers Mfg. Co. (Argentina) E. Lix-Klett & Co., S.A.

BOLIVIA, La Paz—Corporación Comercial Boliviana, S.A. (Cobaña).* Compañía Comercial e Industrial "Titan" S.A. (Texrope products only)

BRASIL, São Paulo y Rio de Janeiro—Sociedade Técnica e Comercial Serva Ribeiro, S. A.; Recife (Pernambuco)—Schenker, Barbosa & Cia; Porto Alegre—Bromberg Comercial, S. A.

CHILE, Santiago—Salinas, Fabres & Cia. Ltda.*

COLOMBIA, Barranquilla—Osorio & Cia, Ltda.; Bogotá—Alsoco, Ltda.;* Medellin y Cali—Peter Santa Maria & Cia., Ltda.*

COSTA RICA, San José — Distribuidora, S. A.

CUBA, Habana—L. G. Aguilera & Co., S. A.

DOMINICAN REPUBLIC, Ciudad Trujillo — Dominican Motors Co., C por A.*

ECUADOR, Quito — Luis A. Hernandez.*

EL SALVADOR, San Salvador—Compañia Importadora de Maquinaria.*

GUADELOUPE, Pointe-à-Pitre—Société Commerciale Guadeloupéenne.*

GUATEMALA, Guatemala City—Compañia Distribuidora Kepaco, S. A.*

HAITI, Port-au-Prince—Electra.

HAWAII, Honolulu — Honolulu Iron Works Company.*

INDIA, Bombay — Indequip Private Limited.

JAMAICA, Kingston — Kingston Industrial Agencies.*

MEXICO, México D. F. — Allis-Chalmers de México, S. A.

NICARAGUA, Managua—Automotive and Industrial Equipment Co.*

PANAMA, Panamá City — F. Icaza & Co., Inc.*

PARAGUAY, Asunción — Importadora y Exportadora del Litoral, S. A.*

PERU, Lima — Peruvian Trading Corp., Ltd., S. A.

PUERTO RICO, Ponce — Porto Rico Iron Works, Inc.;* San Juan—Garcia Machinery, Inc. (Texrope products only.)

REPUBLIC OF PHILIPPINES, Manila, Bacolod City—Negros Occidental; Cebu, Manila — Earnshaws Docks & Honolulu Iron Works.*

SURINAM, Paramaribo, Nieuw-Nickerie — N. V. Ingenieursbureau H. N. Van Dijk.*

TRINIDAD, Port of Spain—J. N. Harriman & Co., Ltd.*

URUGUAY, Montevideo — J. Felix Castillo (H).

VENEZUELA, Caracas — Compañia Anónima Tecnomat.

ALLIS-CHALMERS MANUFACTURING COMPANY, Industries Group, Export Dept., Milwaukee 1, Wis., U. S. A., Factories in U. S. A., England and Canada

Equipment & Service Market

WANTED

Experienced Agriculturist for Beet Sugar Factory East of Mississippi. State background and Salary desired. Box 747.

Sugar, 604 Fifth Ave., N. Y. 20, N. Y.

POSITION WANTED

Factory Mill Engineer with 30 years experience, Cuba and Dominican Republic. Chief Engineer for 20 years, 4000 Ton Factory, four years Manager 2000 Ton Raw & Refined Sugar Factory. Reply to Sugar, Box #754, 604 Fifth Ave., New York 20, N. Y.

— POSITION WANTED —

FABRICATION SUPERINTENDENT. American born, Engineering background, heavy experience in building construction, plant modernization and mechanical operation. Wide field of experience technical factory process operation, producing raws, plantation whites and refined sugars using carbonation, sulphitation and carbon processes. Accept position this country or abroad. Speaks good Spanish. Box #753, SUGAR, 604 Fifth Avenue, New York 20, N. Y., U.S.A.

FOR SALE

4-650 sq. ft. United plate and frame presses. Size 36" x 36". Side feed open delivery.

WALTER J. FOLSE & SON
P. O. Box 4239
New Orleans 18, Louisana

FOR SALE

Vallez Filter—Type C-49-1, 738 sq. feet with 41 Stainless covered leaves. Used only 6 months. Also Hersey Dryers, Vacuum Pans, Evaporators, Centrifugals, Rotary Dryers, etc.

Send for Listing.

STEIN EQUIPMENT COMPANY
107-8th Street Brooklyn 15, New York

FOR SALE

2—Beet Sugar Factories 1200 and 2000 tons.
2—Cane Factories 1800 and 1200 tons.
1—Swenson 13,000 sq. ft. quad Evaporator (1944) copper tubes.
4—Cresson Morris & AT&M 40" Centrifugals 1200 rpm.
5—AT&M 40" Centrifugals 1100 rpm (1940)
7—Juice Heaters 600 to 900 sq. ft.
2—10 ft. Calandria Pans, steel tubes.
20—Plate & Frame Filter Presses.
9—Vallez & Sweetland Filters up to 720 sq. ft., 30", 32", 36".
2—Link Belt Roto-Louvre Dryers 5'x20', 6'x24'.
2—Granulators 5'x23' and 6'x23'.
5—Boilers 290 to 700 HP. 150# PSI.
5—Corliss Engines 20"x42" to 30"x48".
12—Moore Elliot Terry Steam Turbines 15 to 200 HP.

SPECIALIZING IN SINGLE ITEMS TO COMPLETE PLANTS.
PARTIAL LIST ONLY
YOUR INQUIRIES SOLICITED

BRILL EQUIPMENT COMPANY
2401 Third Ave., New York 51, N. Y.
Texas Office: 4101 San Jacinto St., Houston, Texas
Cable Address: Bristen Est. 1926

LIQUIDATING SURPLUS SWEETLAND #12 FILTERS WITH 72 STAINLESS STEEL LEAVES FROM A MOLASSES COMPANY.
DETAILS UPON REQUEST.
R. GELB & SONS, INC.
US22 UNION N. J. MUrdock 6-4900

E. A. ROSE, INC.
Consulting Engineers
COMPLETE
SUGAR
FACTORIES
LEE CIRCLE BUILDING
NEW ORLEANS, U.S.A.

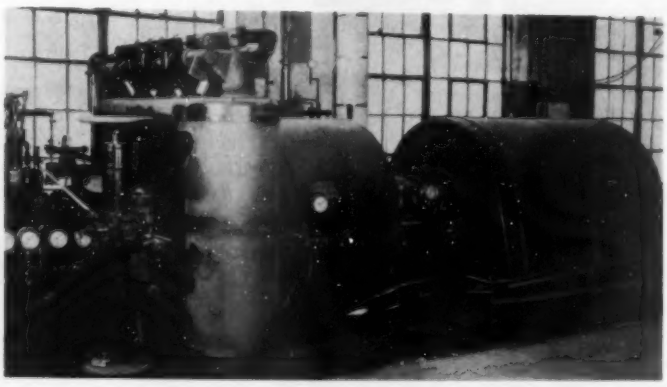
ROY J. LEFFINGWELL
HUMAN RELATIONS CONSULTANT TO THE SUGAR INDUSTRY
11 Years Head of Public Relations Hawaiian Sugar Planters' Assn.
P.O. Box 4034 Honolulu, Hawaii

YEAST
Distillers Dried Yeast
Primary Grown Yeast
Alcohol—Molasses—Dry Ice
Continuous Food Processes
Waste Disposal
GUSTAVE T. REICH & ASSOCIATES
4604 Osage Ave. Philadelphia 43, Pa.

NON-CONDENSING TURBINE-GENERATOR

2500 KW GENERAL ELECTRIC SERIAL #37523

160/180#, 10/30# BACK PRESSURE 3/60/2300V



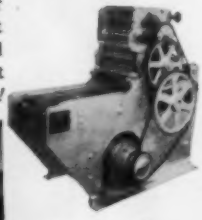
OTHER NON-CONDENSING TURBINES

1250 KW ALLIS CHALMERS 110/145#, 8/18 BP 3/60/480V
750 KW WESTINGHOUSE 200#, 10/30# BP 3/60/480V
500 KW GENERAL ELECTRIC 150#, 10# BP 3/60/480V

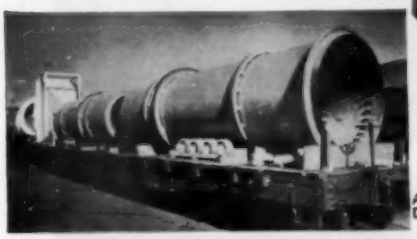
CHARLES WEAVER
19701 JAMES COUZENS HIGHWAY
Phone: BRoadway 3-1901 DETROIT 35, MICHIGAN

For *Granulated* Sugar
that won't lump...
and *lump* sugar
that won't granulate
specify STANDARD HERSEY
SUGAR DRYERS & CUBERS!

STANDARD-HERSEY products for the sugar industry *are the standard*—there's no doubt about it because year after year, it's Standard in every efficiently run plant...used throughout the world. *Write today for a complete bulletin!*



The STANDARD-HERSEY Sugar Cuber, Standard of the Industry!



A large STANDARD-HERSEY Dryer ready for shipment.

STANDARD STEEL CORPORATION
General Offices and Factory, 5069 Boyle Avenue, Los Angeles 58, Calif.
LEADER IRON WORKS
Midwest Offices and Factory,
Decatur 69, Illinois
ROTARY DRYERS · KILNS · COOLERS · ASPHALT PLANTS

PRECISION BS INSTRUMENTS

Pocket Refractometers

for the examination of

JAM
FRUIT JUICE
CONCENTRATED ORANGE JUICE
SUGAR SOLUTIONS
BEVERAGES
STARCH PRODUCTS
MILK
FRUIT
HONEY
Etc.

Instruments Reading 0-50, 15-55 and 40-85% soluble solids, each	£12.	0.	0.
Ditto 0-28% soluble solids	£15.	0.	0.
Ditto 78-98% honey or 0-27% starch, each	£15.	0.	0.

Ex Works. Postage and packing extra.

These instruments can be supplied direct from the makers:

Bellingham & Stanley Ltd.
DEPT. S, 71 HORNSEY RISE, LONDON, N. 19, ENGLAND
or from:
selling agents in all countries

International Sugar Council Reports on 1956

The annual report of the International Sugar Council covering activities of the organization during 1956 calendar year details the work of the Seventh, Eighth, Special, Ninth and Tenth sessions. On December 1, 1955 the Council adopted an estimate of free market requirements for the third quota year (1956) of 4,520,000 metric tons and established export quotas at 3,996,000 metric tons. The spot price was then 3.13 cents per pound. Meeting at the end of July the Council increased export quotas to 4,440,000 metric tons. At this time the spot price was 3.41 cents per pound. On October 3rd with the spot price at 3.25 cents per pound export quotas were reduced 2% to 4,369,100 tons. On the 1st of November a further reduction to 4,351,375 metric tons was decreed. On November 8th prices began a steady rise reaching 5.00 cents on November 28th. On December 14th the Council, in view of improving market conditions, decided that export quotas could be increased 5% to 4,573,375 metric tons. Full details of the quota adjustments and prices are given in an Annex.

At its Sixth session the Council had decided to hold an international conference under the auspices of the United Nations to which all interested governments would be invited and at which the operation of the agreement could be reviewed and all recommendations for its amendment considered. Accordingly an International Sugar Conference was convened by the Secretary-General of the United Nations in New York on May 21 and adjourned on June 20. The Conference was resumed in Geneva on October 4 and concluded on November 2. The Agreement was amended by a Protocol which is included in the Annual Report as an Annex. In regard to 1957, the Council at its December 14th meeting set initial export quotas for 1957 as 4,573,375 metric tons and established a reserve of 20,000 tons to meet any proved cases of special hardship.

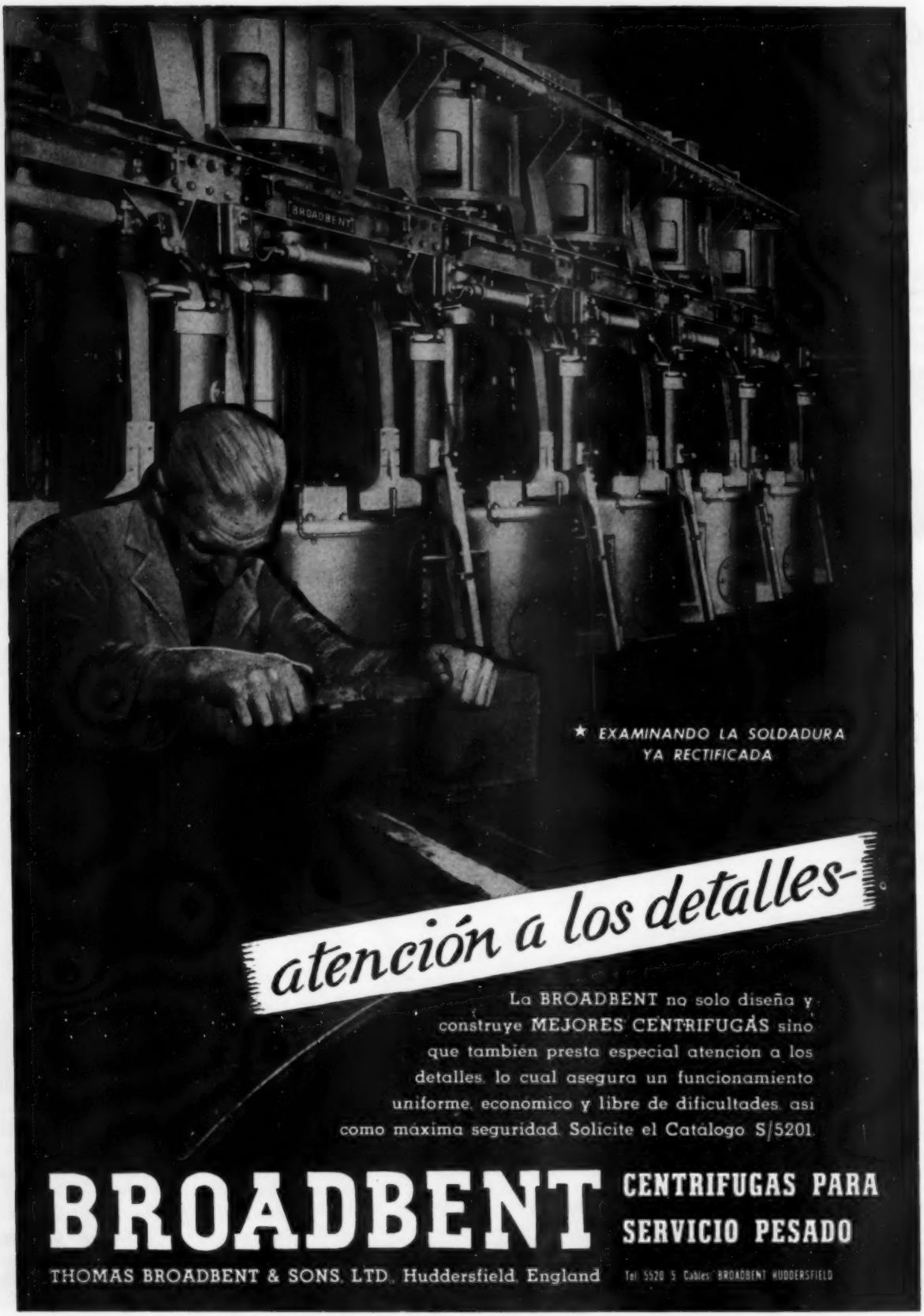
■

New Administration Building

A new administration building at McBryde Sugar Company on Kauai is now under construction. The building site was recently cleared of old buildings and trees, and ground trenching of the building's foundation is almost complete. Masonry and brickwork will soon be started by Nakao & Company. All other remaining phases of construction work will be performed by the plantation carpenters, plumbers and painters, according to company reports.

Industrial Sugar in Bulk

An industrial user installs a unique bulk sugar storage bin. Robert A. Johnston Company, makers of quality chocolate products, has installed at their Hillside, N. J. plant a 25 ft. high unit with aluminum siding designed by J. C. Corrigan Company of Boston capable of storing 75,000 lbs. of sugar at substantial savings compared with conventional bins.


BROADBENT
★ EXAMINANDO LA SOLDADURA YA RECTIFICADA
atención a los detalles-
La BROADBENT no solo diseña y construye MEJORES CENTRIFUGAS sino que tambien presta especial atencion a los detalles, lo cual asegura un funcionamiento uniforme, economico y libre de dificultades, asi como maxima seguridad. Solicite el Catálogo S/5201.
BROADBENT
CENTRIFUGAS PARA SERVICIO PESADO
THOMAS BROADBENT & SONS, LTD., Huddersfield, England
Tel: 5520 5 Cables: BROADBENT HUDDERSFIELD

AZÚCAR

Agosto 1957

Filtración Continua de Jugos de Primera Carbonatación

Por J. Delcourt
Director Técnico, Refinería Notre-Dame
Oreye, Bélgica

Durante la campaña de 1956 se puso en servicio en la Refinería Notre-Dame (Bélgica) un filtro espesador construído de acuerdo con un diseño recientemente patentado por la Cie. de Fives-Lille (Francia).

En esta fábrica, el jugo crudo se produce en un difusor de remolacha continuo del tipo usado en la Refinería Tirlement (Bélgica). Primeramente, el jugo se prealcaliza conforme a la escala de Brieghel-Mueller, lo que es seguido por la alcalización principal que eleva su alcalinidad a 15 gramos de CaO por litro. Luego se calienta a 85° C y se carbonata bajo condiciones estables hasta obtener una alcalinidad de 0.8 de gramo de CaO. Después de recalentarlo a 91° C, el jugo turbio carbonatado se envía al filtro espesador, donde se filtra a presiones constantes pero ajustables desde 7 hasta 28 lbs./pulg. cuadrada.

De cada 100 litros de jugo turbio que entra en el filtro espesador se obtienen 92 galones de jugo claro, el que es entonces pasado por las etapas usuales de segunda alcalización, segunda carbonatación, etc. Los ocho litros restantes salen en forma de lodo que contiene 360 gramos de $CaCO_3$ por litro. Este lodo se pasa por un filtro Dorr-Oliver giratorio al vacío para extraerle la sacarosa.

La construcción del filtro espesador Fives-Lille incluye un tanque cilíndrico de plancha de acero soldada, de 8½ pies de diámetro por 18 pies de largo, probado en el taller a 43 lbs./pulg. cuadrada y diseñado para una presión máxima de trabajo de 28 lbs.

El tanque incluye un árbol central hueco donde van montados 12 discos huecos, cada uno de los cuales está dividido en 10 secciones hechas de una aleación liviana, perforadas en su cara plana y cubiertas de paño de filtro. El área total filtrante es de 1100 pies cuadrados.

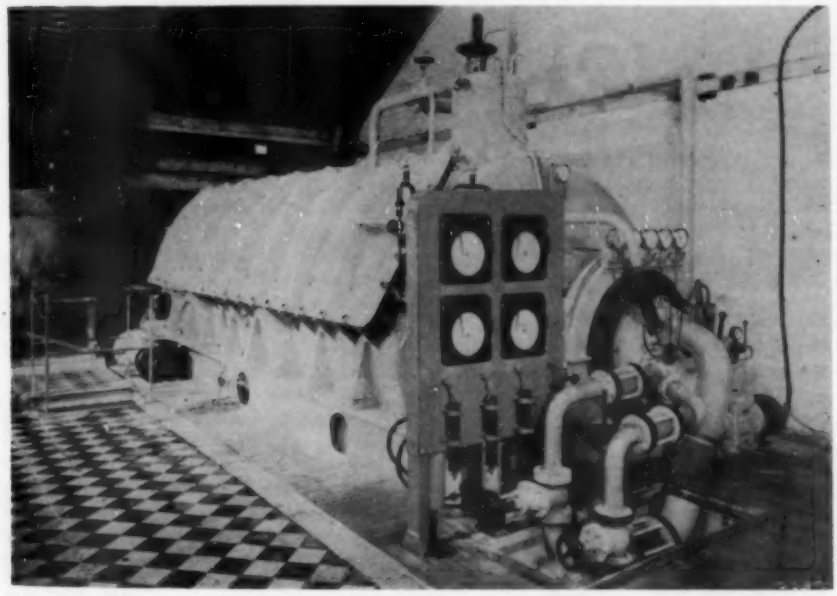
Las secciones huecas de cada disco están unidas por colectores individuales instalados dentro del árbol central hueco; es decir que cada sección tiene su propio colector. Estos diez colectores descargan en dos cabezales de distribución que constan de cuatro cámaras cada uno; estos cabezales van instalados en los dos extremos del árbol central fuera del tanque.

El tanque viene provisto de una tapa o puerta de dos hojas que abarca todo su largo, a fin de facilitar el acceso a los discos. El domo sirve de cámara de aire. El árbol central es accionado por una transmisión de velocidad variable que le permite funcionar desde 0.15 hasta 1 r.p.m. La presión dentro del tanque es regulada por una válvula instalada en el tubo de entrada del jugo. El aparato funciona con los discos filtrantes completamente sumergidos en el jugo turbio de primera carbonatación que entra por el fondo del filtro.

La filtración se verifica como sigue: El jugo turbio que entra en el tanque cubre los discos y deposita el carbonato de calcio y la materia precipitada en los paños del filtro. El jugo filtrado fluye a los colectores individuales y de allí a los cabezales de distribución compuestos de cuatro cámaras, tres de las cuales reciben el jugo filtrado de las secciones de los discos. La contrapresión en estas tres cámaras es ajustada por reguladores de presión. Debido a estas contrapresiones variables, la filtración se verifica a presiones gradualmente mayores, lo que evita el rápido tupimiento de los paños del filtro. En cada vuelta del árbol central, cada sección filtrante se comunica con las tres cámaras de descarga de modo que la filtración se verifica a tres grados de presión dentro del tanque; la segunda filtración ocurre a dos tercios de la presión total; y la tercera filtración a toda presión; entonces, la última cámara se comunica con el ambiente y el jugo sale del filtro.

En cada vuelta del mismo árbol, el lodo de filtración es desalojado de los paños al inyectar una pequeña cantidad (12%) de jugo claro en cada una de las secciones huecas de los discos por el cabezal de distribución, donde una válvula automática especial mantiene una presión un poco más alta que la presión dentro del tanque, indistintamente de posibles variaciones. Los raspadores instalados en la línea central del espesador remueven el lodo y lo dirigen

Fig. 1. Vista exterior del filtro espesador Fives-Lille.



hacia las tolvas entre los discos que lo descargan en un mezclador colocado debajo del tanque; de allí, después de ser homogenizado, el lodo pasa por una válvula reguladora de densidad y va al filtro Dorr-Oliver para extraerle la sacarosa.

La duración de las cuatro etapas de filtración depende de la velocidad de rotación del árbol central y del tamaño de las cuatro cámaras, las cuales están diseñadas de modo que la primera filtración se realiza a un ángulo de rotación de 80°, la segunda a un ángulo de 90°, y la tercera a un ángulo de 135°. El lavado del lodo o torta se hace a un ángulo de 35°.

Cuando el filtro espesador se puso en servicio por primera vez, fué necesario suspender su operación, pues el jugo filtrado salía turbio y muchos paños del filtro estaban rotos. Esta dificultad fué ocasionada por el mal ajuste de los raspadores y porque los paños de filtro (hechos de tela Lainyl/1x/C/47) eran demasiado grandes. Una vez corregidos estos inconvenientes, el filtro espesador funcionó satisfactoriamente, con los resultados promedios descrito en la Tabla I.

Como el rendimiento varía casi proporcionalmente a la raíz cuadrada de la presión dentro del tanque, cabe considerar que un filtro puede manejar fácilmente el jugo de 1800 toneladas de remolacha, siempre que un proceso de purificación bien dirigido envíe al filtro jugos de alta calidad con un factor de filtración (FK) menor de 3.

En filtros prensas ordinarios se trató una cantidad de jugo turbio equivalente a 400 toneladas de remolacha por día. La pureza y Brix de los jugos filtrados en los dos tipos de filtro fueron casi iguales, pero el jugo del filtro espesador fué más claro.

Fig. 2. Filtro espesador Fives-Lille con un disco destapado (sin paño).

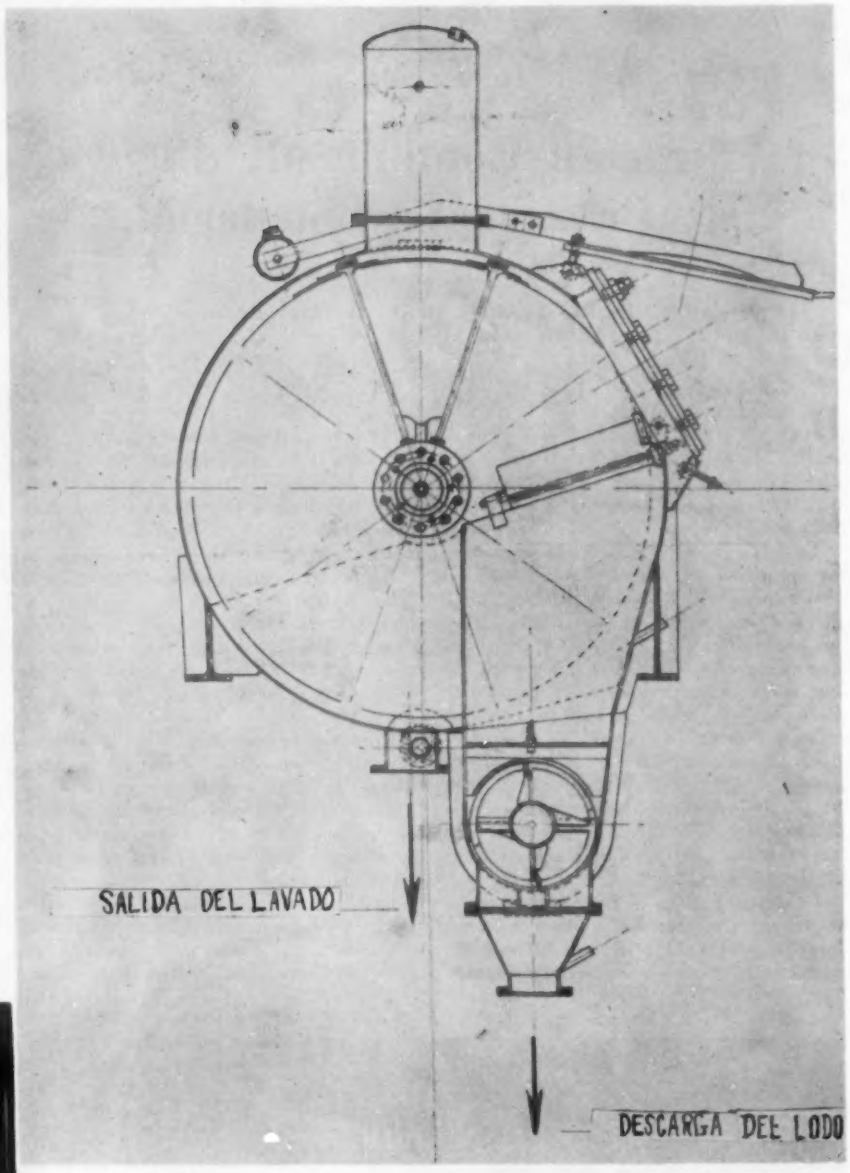


Fig. 3 Corte seccional del filtro espesador Fives-Lille.

Tabla I.

Rendimiento de jugo turbio	44 pies cúb./min.
Rendimiento de jugo filtrado	40 pies cúb./min.
Rendimiento de lodo o torta	8.5 pies cúb./min.
Concentración de lodo	360 gr. $CaCO_3$/lit.
Factor de filtración (FK)	210
Presión dentro del tanque	14 lb./pulg. cuad.
Presión de inyección	¼ lb./pulg. cuad.
Velocidad de rotación	18 revol./hr.
Pérdida en lodo	0.06% remolacha
Agua de lavado de torta	0.35 lit./lb. torta
Promedio remolacha elaborada	1,600 tons./día

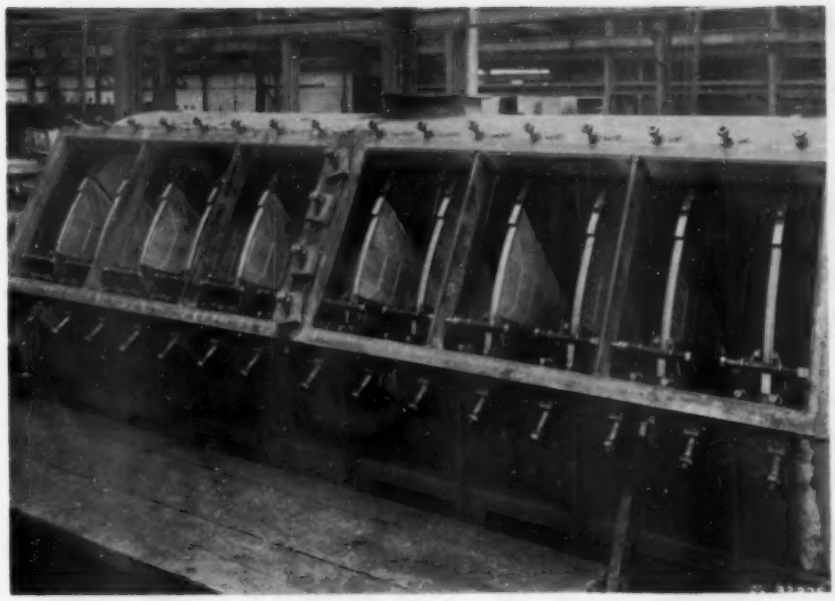


Fig. 4. Filtro espesador Fives-Lille con los discos parcialmente desmontados.

Los paños del filtro se conservan limpios fácilmente, lavándolos cada quince días (sin desmontarlos), primero con agua caliente y luego con una solución ácida débil, terminando con agua caliente.

Un filtro al vacío de 270 pies cuadrados manejó con facilidad todo el lodo concentrado del filtro espesador, y podría manejar más todavía; a una velocidad del tambor del filtro de 12 a 18 vueltas por hora se obtuvo una torta de 5/8 a 3/4 pulg. de espesor. El costo de un filtro espesador y el de una estación de filtros-prensas compuesta de dos decantadores y dos filtros al vacío son aproximadamente iguales, pero el filtro espesador ocupa mucho menos espacio. Además, con el último se pierde menos sacarosa en la torta. No obstante, una condición primordial para el buen funcionamiento de este aparato es que el jugo alcalizado tenga un alto coeficiente de filtración basado en la escala de Brieghel-Mueller. Es indispensable que el personal encargado del proceso de purificación esté seguro de que el jugo crudo ha sido debidamente purificado.

■

Recolección de Caña a Base de Veinticuatro Horas

Por Jorge A. Acosta

Es axiomático que con los costos de materiales y la mano de obra en la industria azucarera constantemente en aumento, en tanto que los precios del azúcar continúan relativamente limitados, sólo aquellos ingenios más eficientes pueden sobrevivir en un mercado altamente competitivo. En la fabricación de azúcar se han logrado notables mejoras mecánicas y químicas. El avance en la selección de variedades de caña, en las prácticas de siembra, de cultivo y de recolección, en los trabajos de molienda, en los métodos de elaboración, y en los sistemas de envase o entrega a granel del producto acabado ha sido extraordinario.

Estos nos deja un aspecto por lo menos donde la eficiencia podría ser elevada: Nos referimos al doble manejo de la caña entregada a las fábricas, cuyo sistema podría ser mejorado considerablemente, tornando esta ineficiencia en importantes economías.

El primer paso sería estudiar la práctica en boga, seguida en muchos ingenios, de alimentar los molinos con arpeos. La caña es traída al patio de la fábrica en camiones, en trenes de carretas tiradas por tractor, o por ferrocarril, viene en forma de atados lista para ser depositada en la mesa de alimentación a las desfibradoras y desmenuzadoras. Sin embargo, la alimentación directa no es práctica general, sino que los atados de caña son descargados sobre una pared y se abren; de aquí, la caña es recogida más tarde por arpeos en pequeñas cantidades y alimentada al tándem, o depositada en pilas en otra parte del patio para ser entregada a los molinos por la noche.

Por lo general, la grúa tiene que hacer tres viajes para manejar un solo atado de caña, aunque vaya directamente a la mesa de alimentación. Si en vez de esto, la caña es depositada en una pila para ser molida por la noche, tiene que ser manejada varias veces más. Al cabo de todo este manejo y cuando la caña es al fin entregada a la mesa de alimentación, ya viene toda revuelta, lo que dificulta la alimentación del tándem y reduce su capacidad y eficiencia. A menudo se necesitan dos gruás, una para alimentar el tándem y la otra para apilar la caña en el patio. Si, como frecuentemente sucede, ocurren demoras en moler la caña depositada en el patio, también ocurren pérdidas de sacarosa. También conviene observar que en algunos casos la caña es llevada en vagones desde el cañaveral hasta una estación de transferencia a la línea de ferrocarril principal, a veces hasta dos millas distante de la fábrica, donde es entregada por los carros de ferrocarril y se repite la misma operación antes descrita. De modo que cuando las grúas llegan a recoger la caña por la nocha para entragarla al tándem, ya ha sido manejada por lo menos cuatro veces. Esta duplicación de manejo no aumenta el valor de la caña pero aumenta el monto de los gastos.

Este problema tal vez se pueda resolver adoptando un programa de corte, carga y entrega de la caña a la fábrica a base de veinticuatro horas diarias. Esto permitiría apilar la caña en el cañaveral, si fuese necesaria almacenarla en parte alguna. Las entregas a la fábrica deben hacerse lo más directamente posible. Este sistema de veinticuatro horas reduciría la cantidad de equipo necesario para los trabajos de recolección y entrega. Por otra parte se necesitarían medios de iluminación en los cañaverales para los trabajos de recolección y del equipo de acarreo. En tal caso, al terminar de cargar una carreta de caña, ésta podría ser llevada del cañaveral hasta el camino o carretera, acoplada al tren o carravana, y arrastrada hsta la fábrica por tractores provistos de neumáticos. Las carretas o vagones deben estar provistos de redes tipo de cadena para descargar la caña en forma de atado directamente en la mesa de alimentación; en el caso de trenes de molienda de gran capacidad, se podrían usar dos mesas de alimentación.

Un punto importante a estudiar sería la coordinación y movimiento del equipo rodante a fin de asegurar el suministro con-

(Sigue en la página 44)

Difusión de Azúcar de Caña Desfibrada

S. I. Phansalkar y K. H. Rao
Indian Institute of Sugar Technology
Kanpur, India

En años recientes, la extracción de azúcar de la caña por el proceso de difusión ha atraído la atención de muchos tecnólogos azucareros. Silver[1] ha desarrollado un método que emplea una batería de difusión giratoria doble, en tanto que Wilcox[2] dió a conocer el diseño de un aparato difusor continuo para el mismo fin. En el Instituto de Investigaciones Azucareras de Mackay en Queensland[3] se llevó a cabo un extenso estudio sobre la extracción de azúcar de la caña por el proceso de difusión, durante el cual también se estudió la influencia del tamaño o grueso de las tajadas de caña sobre la velocidad de difusión a distintas temperaturas. Todos estos estudios se basaron principalmente en tajadas de caña de 1/2 a 1/16 de pulgada. En el caso de tajadas del menor grueso estudiado (1/16 de pulg.) se necesitaban de 50 a 60 minutos de caña, aunque en algunas partes esta operación se hizo difícil debido a obstrucciones como alambres eléctricos y telefónicos, árboles y edificios, lo que exigió gran pericia de parte del piloto. A fin de asegurar de que el yerbicida fuese aplicado en los puntos predeterminados, las aspersiones se hicieron temprano en la mañana cuando el aire estaba tranquilo, de cuyo modo se evitaron los arrastres.

TABLA 1

Difusión de Azúcar de la Caña

Caña Desfibrada	Sacarosa Disponible	% Sacarosa Extraída	% Azúcar Difuso
Muestra #1	38.96	38.44	98.6
Muestra #2	47.19	44.70	94.7
Muestra #3	38.55	36.77	95.4
Muestra #4	38.55	37.33	96.8

Cantidad de caña desfibrada empleada—330 gm (Doble extracción). Tiempo de contacto—5 minutos.

Los experimentos realizados en este Instituto se refieren a la difusión de azúcar de caña desfibrada, sobre lo cual no se encuentra información alguna en las publicaciones disponibles. En este caso se utilizó caña preparada en una desfibradora de laboratorio mecánica, cuyo material se mantuvo sumergido en agua a una temperatura predeterminada y durante cierto período de tiempo. Luego se calculó el contenido de sacarosa en la solución extraída; los resultados logrados se consignan en la Tabla 1. Es interesante observar que por el proceso de difusión utilizando caña desfibrada (en vez de rebanda) se pudo obtener del 95 al 98 por ciento de la extracción de azúcar máxima potencial en sólo 5 minutos.

Por consiguiente, los experimentos demuestran la posibilidad de éxito en el empleo de este método en gran escala.

Referencias

[1] Silver, H. F., Pat. No. 2,658,010, E.U.A., 1953.

[2] Wilcox, P. W., Sugar J., 46, 28-30 (1951).

[3] Zemek, R. J., Techn. Rept. No. 25, Sugar Res. Inst., Mackay, Queensland (1954).

Aspersión Aérea de Yerbicidas

En las regiones de Home Hill y Giru, Australia, se introdujo un nuevo adelanto en el cultivo de la caña de azúcar con buenos resultados, siendo éste la aspersión aérea de los cañaverales con yerbicidas hormonales. A fines de 1956 y principios de 1957, algunos cosecheros de caña observaron un denso crecimiento de enredaderas convulváceas en sus cañaverales, las cuales se encontraban demasiado crecidas para ser eliminadas con azadón. Como la destrucción de estos yerbajos a mano resultaría impráctica, mandaron a llamar una empresa dedicada a trabajos de aspersión por avión para que hiciese una demostración. Los resultados de este método fueron tan satisfactorios que probablemente será ahora adoptado en las regiones donde se realizaron las pruebas.

Las aspersiones se hicieron con un avión volando inmediatamente sobre las plantas a 180° F. para obtener una extracción óptima de azúcar correspondiente al 95 por ciento de la extracción máxima potencial.

En resumen, en el caso de nuevos métodos, los costos representan un factor importante, y aunque éstos varían según la extensión de las siembras tratadas y la distancia desde el punto de aterrizaje del avión, las recientes aspersiones aéreas en las regiones de Burdekin y Giru costaron entre £2/10 y £3 ($7.00 y $8.40) por acre, lo que incluye 2½ lbs. de yerbicida hormonal por acre. Basándonos en los resultados logrados, cabe esperar que la extensión asperjada por este método irá aumentando en el futuro.

(*The Cane Growers' Quarterly Bulletin*, Vol. 20, No. 4, pág. 116.)

Corrección: Fabricación de Azúcar en 1888

El artículo que apareció en las páginas 51-53 y 80 de la edición de Junio 1957 de SUGAR y AZUCAR con relación a un extraordinario logro de antaño es—como se debío haber indicado en dicho artículo—el resumen de un capítulo tomado del interesantísimo libro por Hubert Edson actualmente en prensa y que pronto saldrá a luz.

Este libro, cuyo título provisional es "De la Escasez al Exceso de Azúcar", reseña los 62 años de experiencia del autor en el desenvolvimiento y administración de propiedades o empresas azucareras en Estados Unidos de Norteamérica y en las Antillas. Tan pronto como recibamos un ejemplar, haremos una reseña de su contenido en SUGAR y AZUCAR.

■

Industria de Bebidas Gaseosas

Por ser uno de los principales ingredientes en la industria de bebidas gaseosas, el azúcar ocupará la mente de miles de representantes de la industria embotelladora que asistan a la Exposición Internacional de la Industria de Bebidas Gaseosas del 11 al 14 de noviembre en Washington, D. C. A esta exposición también concurrirán representantes de la industria azucarera para discutir los méritos, usos y otros aspectos de sus productos con individuos o grupos de personaas que soliciten información.

Se anticipa que en 1957 la industria de bebidas gaseosas consuma el equivalente de 1,282,865 toneladas de azúcar refino. Del consumo total de nueve millones de toneladas de azúcar en Estados Unidos, aproximadamente el catorce por ciento se dedica a la preparación de bebidas gaseosas.

Si llegan a confirmarse las expectativas, todo el espacio en el local de la exposición —The National Guard Armory (Armería de la Guardia Nacional)—será vendido. Unas 189 firmas de productos para la industria de bebidas gaseosas ya tienen reservado más de 90 por ciento del espacio disponible.

■

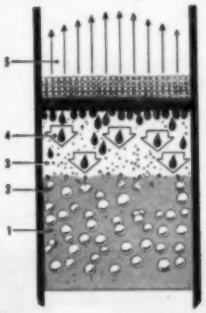
Recolección de Caña

(Viene de la página 43)

ciones en los trabajos de molienda, lo que creemos sería fácil lograr. En vez del gran apuro durante el día para entregar suficiente caña para veinticuatro horas de molienda y del mal aprovechamiento del exceso de equipo rodante, el autor estima que este sistema reduciría los trabajos inútiles y las necesides de equipo, y aseguraría la entrega de cañas más fresca a la fábrica.

Reduzca las Pérdidas de Azúcar . . . Elimine los Paros de Calderas

Cómo Funciona el Eliminador de Neblina



El vapor (1) que se desprende de un líquido (2) siempre arrastra una neblina fina formada por gotitas de líquido (3). Estas gotitas chocan con la extensa superficie de alambre del Eliminador de Neblina y son removidas. Aquí se unen con otras gotitas de líquido y descienden por la malla de alambre, formando gotas más grandes que caen a través del vapor ascendente (4). Ya exento de arrastres, el vapor (5) continúa su paso a través del Eliminador de Neblina.

. . . sencilla y económicamente limitando los arrastres con los Eliminadores de Neblina Metex "Hi-Thruput"

Probado en unas 50 instalaciones en fábricas y refinerías de azúcar en todo el mundo, este nuevo tipo de separador hecho de malla de alambre tejida está dando mejores resultados que cualquier otro dispositivo previamente usado para la separación de arrastres.

Las pérdidas de azúcar han sido reducidas entre 85% y 95% y los costosos efectos del agua de alimentación de calderas contaminada han sido prácticamente eliminados. En efecto, la velocidad de evaporación permisible a menudo puede ser acelerada sin aumentar los gastos de conservación ni ensuciar los tubos de la caldera, y sin ocasionar interrupciones durante corridas normales para hacer limpiezas, reparaciones o reposiciones. Además, los Eliminadores de Neblina Metex "Hi-Thruput", hechos por nuestro método exclusivo de Pliegue de Espiguilla patentado, no se tupen durante templas normales y se pueden limpiar fácilmente con vapor o agua caliente al fin de la corrida.

Para información completa solicite un ejemplar del Boletín ME-8. Para recomendaciones específicas y precios, sírvase indicar el tipo y tamaño del vaso, la velocidad de evaporación, y las temperaturas y presiones de trabajo.

QUALITY METEX PRODUCTS

METAL TEXTILE CORPORATION

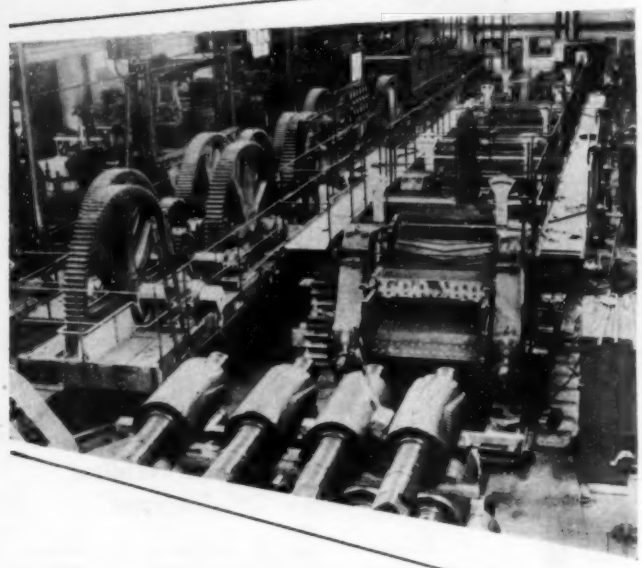
Roselle, New Jersey, E. U. A.

★ Representantes en todo el mundo

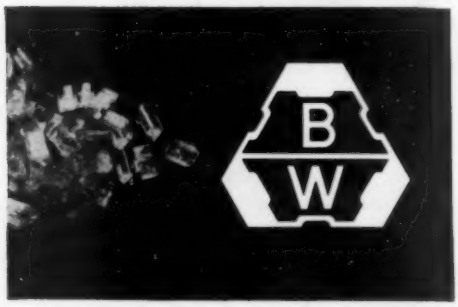
7-061

BUCKAU-WOLF

están fabricando maquinaria azucarera de construcción esmerada para cada sección de ingenios de caña y de remolacha asi como para refinerías. Ellos están bien acostumbrados a considerar los problemas de sus clientes asi como a proyectar, construir, suministrar y montar instalaciones para necesidades individuales.



Trapiche de 15 mazas para caña de azúcar del tipo BUCKAU durante el montaje



MASCHINENFABRIK BUCKAU R. WOLF

AKTIENGESELLSCHAFT · GREVENBROICH-NEUSS

9030 b

ALEMANIA OCCIDENTAL

La manguera en la cual usted puede confiar cuando las cosas se ponen calientes

Esta es la nueva Manguera Contra Incendios Estilo "MHB" de Goodyear. Ha sido diseñada y fabricada para que resista el abuso que una manguera debe soportar en los servicios de limpieza y contra incendios.

La Manguera Estilo "MHB" está reforzada con cuerdas sintéticas de alta tensión y trenzadas horizontalmente. Es excepcionalmente fuerte . . . probada y garantizada para 400 lbs. de presión. Y su cubierta especial de caucho no sólo es resistente al petróleo, sino que también resiste los cortes y la fuerte abrasión.

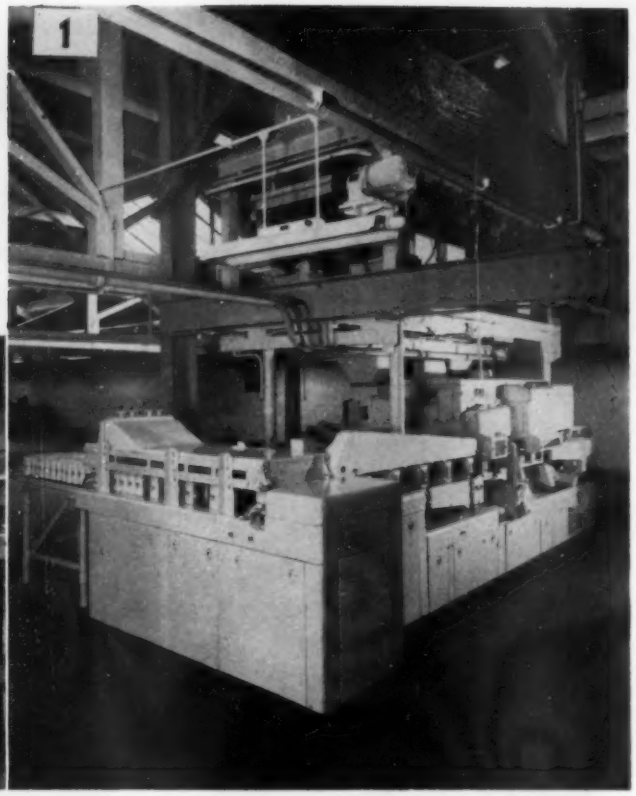
Y sin embargo, usted no tiene que sacrificar flexibilidad para obtener su duración inigualable. La Manguera Estilo "MHB" es muy fácil de manejar y dirigirla. Se enrolla con suma facilidad para almacenarla. Es a prueba de moho . . . en cualquier clase de clima.

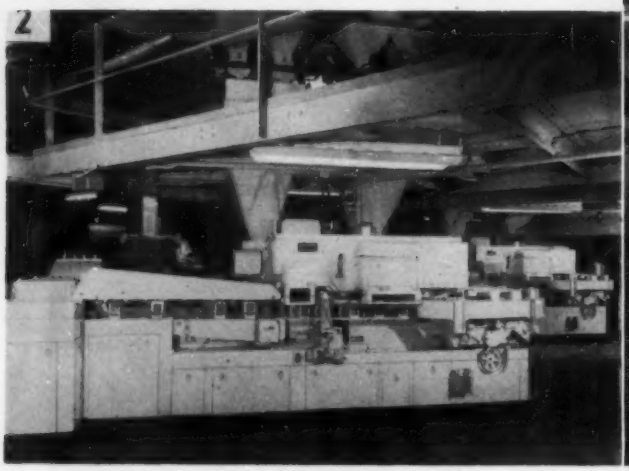
¿Entonces para qué arriesgarse? Para obtener mayor información acerca de la Manguera Estilo "MHB" Contra Incendios, visite la oficina de Goodyear más cercana a su localidad, o escriba a: Goodyear International Corporation, Akron 16, Ohio, U.S.A.

GOODYEAR

Los productos Goodyear son manufacturados en: *Alemania, Argentina, Australia, Brasil, Canadá, Colombia, Cuba, Filipinas, India, Indonesia, Inglaterra, Irlanda, Japón, Los Estados Unidos de Norte América, Luxemburgo, Méjico, Nueva Zelandia, Perú, Sud Africa, Suecia, Venezuela. Representantes, Sucursales y Distribuidores en todo el mundo.*

Envase de Azúcar a Razón de 150 Sacos por Minuto





Arriba izquierda, dos envasadoras Brecknell-Dolman & Rogers de alto rendimiento trabajando lado a lado en la refinería de Tate & Lyle en Londres; directamente arriba, una instalación en la refinería de Tate & Lyle en Liverpool.

La firma de Brecknell-Dolman & Rogers Ltd., de Bristol, Inglaterra, en colaboración con ingenieros de Tate & Lyle, refinadores ingleses, ha desarrollado la envasadora más rápida del mundo para sacos de una o dos libras de azúcar granulado. Esta máquina—conocida como la "Envasadora Titeseal"—se está usando actualmente en refinerías de azúcar en varias partes del mundo, y es capaz de envasar hasta 150 sacos por minuto. La nueva envasadora pesa el azúcar automáticamente con precisión, lo llena en los sacos o bolsas, lo asienta mediante vibraciones reguladas, cierra los sacos con una doblez uniforme, y luego los descarga de una secadora en líneas de cuatro, listos para su distribución. No se necesita más que un operador para vigilar la máquina y suplirla de bolsas según las va utilizando.

El alto rendimiento de la envasadora Titeseal se debe principalmente a su operación continua. La mayoría de máquinas llenadoras y cerradoras funcionan intermitentemente, y los sacos permanecen fijos mientras se realizan las operaciones de doblado y cierre. Pero la Titeseal funciona constantemente, lo que aumenta el rendimiento de envase sin aumentar mucho el ritmo del movimiento de los sacos; además, el tiempo dedicado al arranque y paro de máquinas convencionales se aprovecha para aumentar el rendimiento de la nueva envasadora.

El mecanismo de la Titeseal está montado sobre la línea de paso de los sacos llenos, de modo que si llega a reventar alguno de ellos, el azúcar no puede afectar dicho mecanismo y se puede recoger en un recipiente en el fondo de la máquina sin que ocasione averías.

El cuerpo de la máquina tiene dos lados paralelos con extremos radiales, alrededor de los cuales corre continuamente un transportador sin fin horizontal. El transportador está provisto de una serie de compartimientos independientes uniformemente espaciados y provistos de tablillas engoznadas que sujetan los sacos firmemente mientras se llenan y cierran. A un lado de la máquina se encuentran dos cámaras o depósitos de sacos vacíos dispuestos para ser colocados debajo de los pitones alimentados por la unidad pesadora. Los sacos son tomados de los depósitos uno a la vez por "chupones" de caucho montados en los extremos de dos brazos oscilantes y conectados a una línea al vacío, los que los abren y los colocan debajo de los pitones llenadores. Los pitones tienen bocas engoznadas que entran cerradas en el saco y se abren dentro. Tan pronto como se llenan los sacos, las bocas de los pitones se cierran, se sueltan las grapas que sujetan los sacos y éstos caen en una plataforma, de donde pasan al transportador continuo.

El azúcar en los sacos comienza a asentarse en el transportador según corre alrededor de los extremos radiales de la máquina y luego pasa por la unidad de asiento final en el lado opuesto. Las unidades de asiento o de compactación tienen un mecanismo vibratorio independiente ajustable que asienta el contenido en el saco y permite obtener un envase compacto.

Entonces, los sacos pasan por el mecanismo de cierre; la primera operación consiste en doblar hacia adentro los refuerzos laterales por dedos mecánicos a la vez que se cierra el saco al comprimir los dos lados. Luego pasan por el mecanismo conformador que agarra y dobla el borde del saco sobre el contenido; la siguiente operación es el doble pliegue antes de cortarlos y pasar por el rodillo encolador. Entonces, los sacos pasan al segundo extremo radial, donde se abren los compartimientos del transportador y se sacan uno a la vez por un par de bandas móviles. Los sacos son conducidos entre estas dos bandas (una en el fondo y la otra sobre la boca) de modo que las dobleces encoladas se mantienen firmemente en la debida posición, de donde pasan a la secadora en hileras de cuatro. La secadora tambien tiene una serie de bandas que mantienen una presión constante sobre las cabezas de los sacos mientras se seca el encolado, de donde salen también en hileras de cuatro, listos para su distribución.

Funcionando a razón de 150 sacos por minuto, el mecanismo de pesar produce un peso exacto dentro de medio dracma, más o menos. La nueva envasadora tiene 16 pies y 7 pulgadas de largo por 7 pies y 6½ pulgadas de ancho, y pesa 8½ toneladas con todo su equipo.

FILTROS DE PRECAPA GIRATORIOS

Aunque los filtros de precapa giratorios al vacío (y a presión) constituyen un factor cada día más importante en filtración, no existía un medio de comparación para el estudio sistemático de la velocidad de filtración, cantidad de auxiliar filtrante, y todas las demás variantes funcionales en filtros de precapa. Es cierto que se usaban filtros de hojas comprobadoras, pero la falta de un mecanismo raspador exactamente regulado—entre otras cosas—limitaba su utilidad y restringía la aplicación de los resultados a la filtración en fábricas en plena escala. Tales comprobaciones, aunque imprácticas en cuanto al tiempo y gastos que implican, eran hasta ahora el único medio de estudiar con precisión todas las variantes en la determinación del óptimo rendimiento de filtros de precapa al menor costo. Sólo aquellos que han luchado con tales comprobaciones pueden apreciar las grandes dificultades que este trabajo implica. A pesar de ello, las economías potenciales que las mejoras en filtración ofrecen son tan importantes que la solución de esta problema se hizo imperiosa.

Creemos que la Hoja Dicalite Comprobadora de Filtros de Precapa Giratorios para laboratorios recientement concebida y descrita en la reunión de junio del Instituto Americano de Ingenieros Químicos en Seattle, va lejos hacia la solución de este problema.

Este aparato viene a complementar el bien conocido Filtro "Bomba" concebido por Dicalite hace tiempo para el estudio de presiones de filtración, hoy día etensamente en uso para fines de investigación y regulación en plantas y en laboratorios industriales, por fabricantes de filtros y por investigadores en unisersidades.

La nueva hoja Dicalite comprobadora de filtros ya se está usando en la determinación de las normas de funcionamiento más eficientes para instalaciones existentes de filtros de precapa giratorios y en estudios para determinar las ventajas posibles en aplicaciones potenciales. Si usted tiene algún problema relacionado con filtros de precapa giratorios, los ingenieros viajantes de Dicalite se complacerán en tratar con usted la aplicación de la nueva hoja comprobadora de filtros a tales problemas. Los representantes de fabricantes de filtros pronto tendrán este nuevo aparato Dicalite de comprobación para ayudarlos en su trabajo.

Paul W. Lepple, Director Técnico

Los estudios en filtración, anteriormente imposibles excepto en escala experimental, se hacen ahora rápida, económicamente y más exactos por el nuevo aparato concebido por Dicalite.

Se trata de una hoja comprobadora de filtros de precapa giratorios, que viene a ser el primer aparato de laboratorio práctico y preciso para el estudio de las variantes en el proceso de precapa en filtros giratorios. Con él se pueden comprobar cabalmente todas las principales variantes en pocas horas y con unos cuantos galones de licor. Una extensa serie de ensayos ha demostrado que los resultados obtenidos con la Hoja Dicalite Comprobadora de Filtros de Precapa Giratorios están estrechamente de acuerdo con los obtenidos subsiguientemente en trabajos de fábrica en plena escala.

De modo que esta nueva contribución de Dicalite al avance de la técnica en filtración ofrece enormes posibilidades para las empresas elaboradoras.

Para más información, sírvase escribir a:

Dependable GLC GREAT LAKES Dicalite® DIATOMACEOUS MATERIALS

DICALITE DEPARTMENT, Great Lakes Carbon Corporation, 612 South Flower St., Los Angeles 17

La Bethlehem le Compra al Mundo

Para poder producir millones de toneladas de acero anualmente, la Bethlehem importa materias primas de 41 países alrededor del mundo.

Necesitamos, por ejemplo, productos tales como cromo, estaño, tungsteno, manganeso, espato flúor, cáñamo, caucho, pulpa y substancias químicas. Algunos de éstos entran directamente en la composición de los aceros que fabricamos. Otros se emplean en las operaciones fabriles que contribuyen a la producción.

Ud. sabe que la Bethlehem es una de las principales productoras de acero y productos de acero. Pero no olvide que es también compradora en gran escala, en muchísimos mercados de todo el mundo. Bethlehem Steel Export Corporation, 25 Broadway, New York 4, U. S. A. Cablegramas "BETHLEHEM, NEWYORK."

La gran fábrica de la Bethlehem en Sparrows Point, en el puerto de Baltimore, E.U.A., es la mayor planta siderúrgica del mundo situada a orillas del mar. Los productos de exportación de esta fábrica pueden ser cargados a bordo del buque ahí mismo.

BETHLEHEM STEEL

Representada en todas las principales ciudades del mundo por las oficinas y representantes de la Bethlehem Steel Export Company

En Cuba: Bethlehem Steel Export Company, S. A.
Edificio Ambar Motors, Avenida Menocal y 23, Habana

701S

OTRA CARGA MAS DE UTILIDADES...gracias a DIAMOND

¡Señor Azucarero!
aprovéchese de las ventajas que le ofrecen los herbicidas
DIAMOND...

Los herbicidas Diamond representan una inversión muy lucrativa, que rinde espléndidos dividendos destruyendo las hierbas que privan a la caña del agua y de esenciales elementos nutritivos del suelo—hierbas que son criaderos de nocivas plagas de insectos y que encarecen la producción, a la vez que disminuyen la cuantía de las cosechas y desmejoran la calidad de éstas.

En efecto, los herbicidas Diamond son una especie de "socio comanditario", que colabora con el agricultor, le ayuda a aumentar las ganancias, reduciendo el costo y poniéndole en mejores condiciones para competir en los mercados mundiales. Los productores de caña más importantes utilizan los productos químicos agrícolas Diamond Alkali—saben que la etiqueta Diamond está respaldada por uno de los fabricantes más prestigiosos del ramo—que los herbicidas Diamond son eficaces, seguros y económicos.

Permítanos enviarle el nombre de nuestro distribuidor y remitirle a usted a la vez el Boletín PS-001, enteramente gratis. Este boletín contiene instrucciones completas sobre el modo de aplicar nuestros herbicidas, cuadros con recomendaciones para los diversos cultivos y otros datos de inestimable valor para usted.

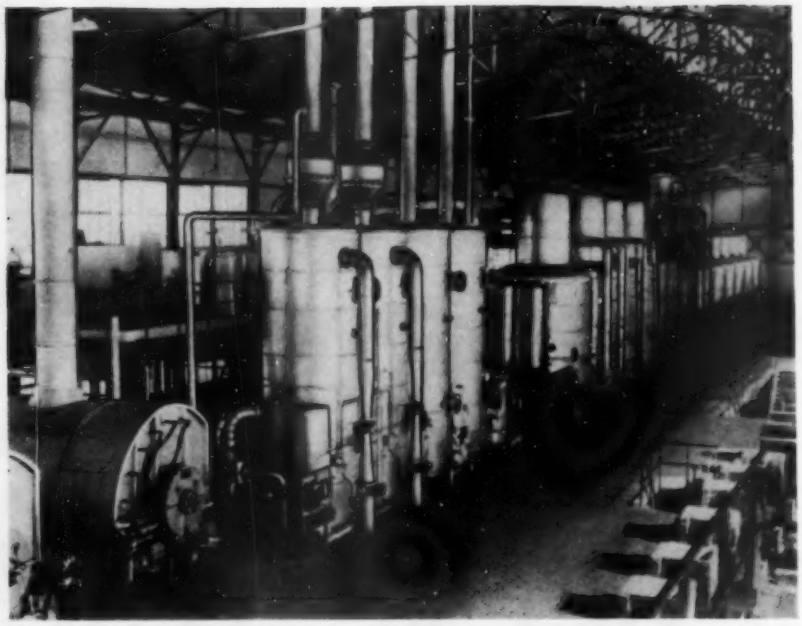
DIAMOND ALKALI CHEMICALS

DIAMOND ALKALI INTER-AMERICAN CORPORATION

ROOM 1614 — 99 PARK AVENUE — NUEVA YORK 16, N. Y., E.U.A.

Dirección cablegráfica: DIAMALKALI

18



Vista interna de la Fábrica de Azúcar de Malatya (Turquia)

FABRICAS DE AZUCAR INSTALADAS DESDE 10 AÑOS

REMOLACHA

	T/dia
Francia	
Artenay	1200
Cagny	800
Corbeilles-du-Gatinais	1200
Origny-Ste-Benoite	900
St-Leu-d'Esserent	1000
Argelia	
Mercier-Lacombe	300
Turquia	
Kayseri	1800
Malatya	1200

CAÑA

	T/dia
Bolivia	
Guabirá	1000
Brasil	
Jacarezinho	600
Matosinhos	800
Vassununga	1000
Uruguay	
El Espinillar	1200
Venezuela	
Ureña	700
Madagascar	
Ankaratra	2500
Congo Francés	
Niari	1150
Congo Belga	
Uvira	1200
Thailandia	
Supanburi	1500

Cie DE FIVES-LILLE

7, RUE MONTALIVET - PARIS VIIIe • DIR. CABLEG : FIVILLE-PARIS

Más adelantos Westinghouse para la industria

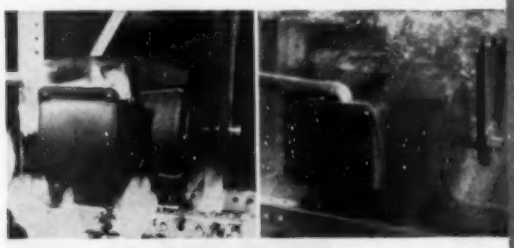
EL NUEVO CONTROL "AUTOMATION" NO TIENE PIEZAS MOVILES

Ahora, en pequeñas unidades de enchufe y cuyo tamaño no es mayor que el de una cajetilla de cigarrillos, ¡hay controles automáticos que gobiernan el funcionamiento de una máquina, una cadena de montaje o toda una fábrica! Estos dispositivos, llamados "Cypak", reciben órdenes y las ejecutan, tienen memoria y deciden pos sí mismos. Tienen años de adelanto sobre los relevadores convencionales y no emplean piezas móviles . . . ninguno de sus componentes puede desgastarse, corroerse o causar un paro en la producción. Sus posibles aplicaciones inmediatas se cuentan por centenares . . . en las reñnerías de petróleo, las fábricas de tejidos, las minas y las fábricas de toda clase. Si desea más información, solicite el folleto "A".

Para obtener información sobre los adelantos aquí mencionados, o si desea ayuda en sus problemas específicos de ingeniería, escriba a Westinghouse Electric International Co., 40 Wall Street, Nueva York 5, E.U.A.

NUEVA IDEA PARA LA DISTRIBUCION DE FUERZA ELECTRICA SECUNDARIA

¡Se ha ideado un nuevo método para la distribución de fuerza eléctrica secundaria que combina las ventajas de los conductos de barra colectora enchufables de Westinghouse con los de baja impedancia! Este sistema, llamado "Unibus", hace innecesarios todos los herrajes especiales . . . simplifica la dispendiosa tarea de tomar medidas sobre el terreno . . . y evita el peligro de tocar piezas electrizadas a través de los orificios de enchufe. Solicite el folleto "B", que contiene detalles completos.



¿CUANTAS TORTURAS RESISTE UN MOTOR?

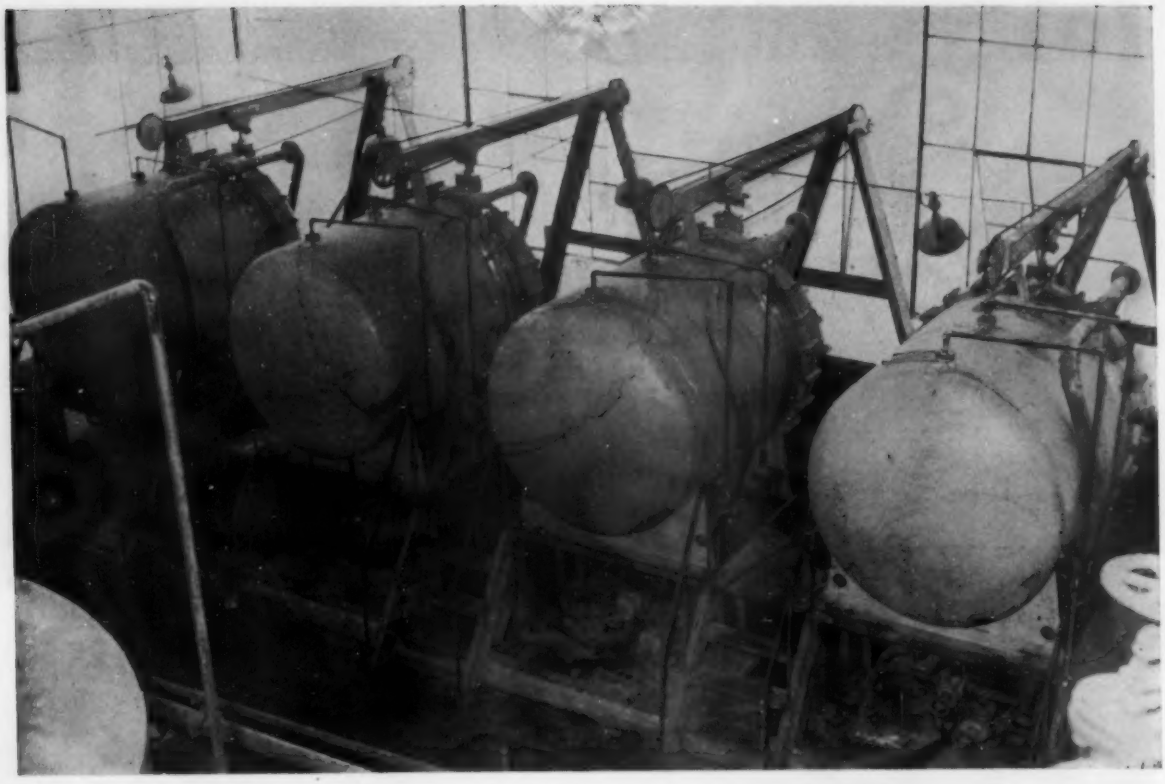
Imagínese un motor eléctrico corriente que funcione por media hora sometido al intenso calor de una llama. ¡Imagíneselo funcionando sin interrupción por dos horas y media totalmente sumergido en agua! Estas dos pruebas espectaculares, ilustradas arriba, demostraron recientemente que los motores Life-Line A Westinghouse son, con mucho, su mejor compra para todas las aplicaciones. Si desea más información sobre los motores Life-Line A Westinghouse, solicite el folleto "C".

PUEDE ESTAR

SEGURO...

SI ES

Westinghouse



La Industrial ayuda a una refinería en Medio Oriente a obtener mayores ganancias

FILTROS Y PROCESO

Estos cuatro Filtors "Industrial" Horizontales fueron instalados en la Refinería de Saturs en Trípoli, Líbano, que produce 110 toneladas de azúcar refino de caña al día. Los filtros, con un área filtrante global de unos 1,400 pies cuadrados, filtran sirope a 70° Brix, 190° F. para remover el carbón activado e impurezas en el proceso de carbón a contracorriente.

DISEÑADOS PARA EL CASO

En este caso, los filtros fueron diseñados para constituir gran parte de la estación de clarificación. Esto permitió eliminar varios decantadores y reducir en alto grado las pérdidas por inversión que suelen ocurrir cuando los jugos se retienen en los decantadores durante muchas horas a temperaturas elevadas. Ahora, los jugos son tratados químicamente y enviados a un decontador simple para unos cuantos minutos de contacto y entonces directamente a la estación de filtros. Todo este proceso se está siguiendo con s'ólo 1/6 del trabajo previamente necesario en la estación de filtros.

No olvide que la Industrial construye Filtros Horizontales, Verticales y Tubulares, de modo que cualquiera que sea el problema de filtración, usted puede depender de la Industrial no sólo para construir sino para diseñar y *recomendar imparcialmente* el sistema más adecuado a sus necesidades.

Si desea más datos acerca de estos magníficos filtros, solicite los Boletines
No. 111
No. NH-122
No. TS-160

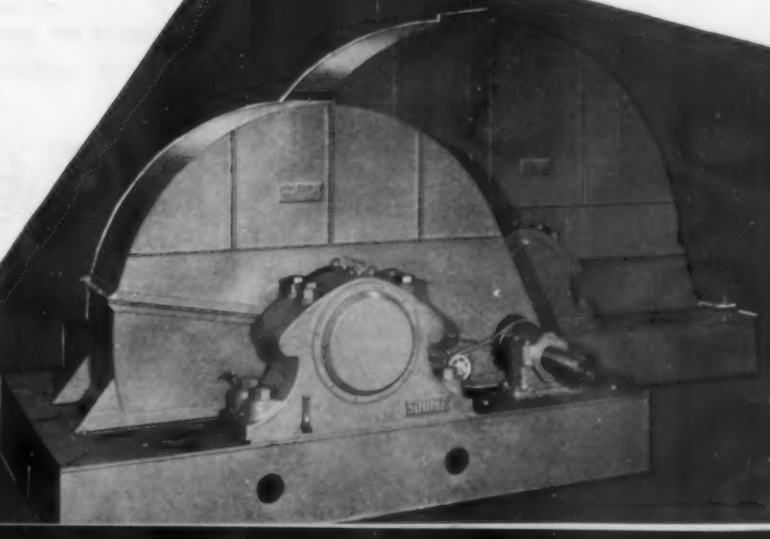
Industrial

INDUSTRIAL

FILTER & PUMP MFG. COMPANY
5928 OGDEN AVENUE • CHICAGO 50, ILL.

DESMENUZADORA DE CAÑA Y ENGRANAJES SQUIER

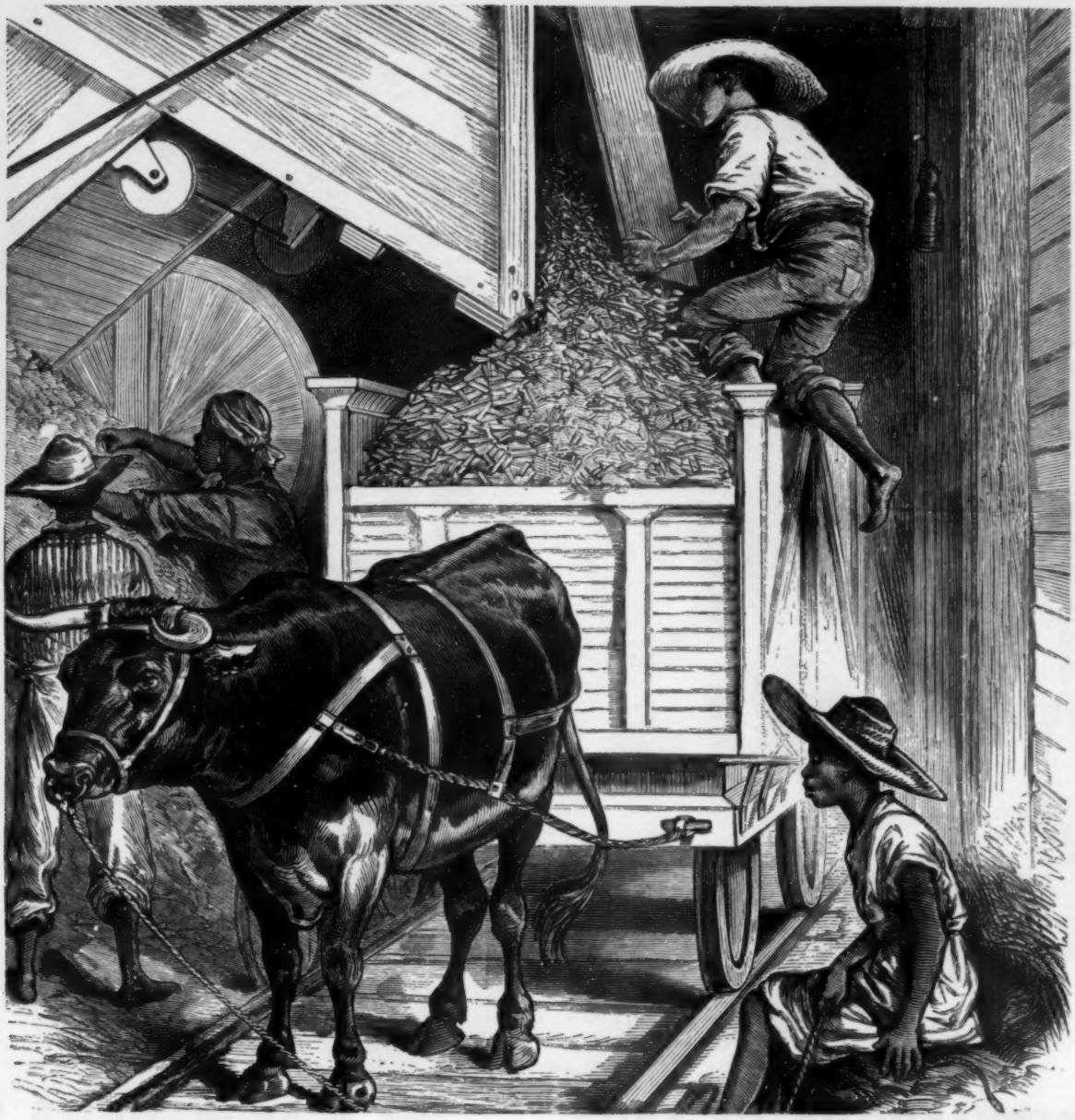
● Nueva desmenuzadora Squier de tres mazas movida por turbina para el Ingenio "San Antonio" en Nicaragua. Esta desmenuzadora de 36 por 78 pulgs., con conductor intermedio y engranajes doble helicoidales encerrados, va delante de un molino de doce mazas ya en servicio.



THE SQUIER CORP.

INGENIEROS Y FABRICANTES

BUFFALO, NEW YORK, E.U.A.



En el pasado, el bagazo era retirado de la desmenuzadora manualmente y cargado en carretas de bueyes. De en cuadro hecho en 1880. Cortesía de The Bettman Archive.

HOY DIA . . . el azúcar se produce por métodos modernos

El carbón Darco® es el método moderno de refinar.

Si desea obtener una copia del cuadro ilustrado, propio para montar en marco, dirijase a la Atlas hoy mismo.

DARCO

MARCA REGISTRADA

DIVISIÓN DE PRODUCTOS QUÍMICOS

ATLAS POWDER COMPANY

WILMINGTON 99, DELAWARE, E. U. A.

Extractos de Publicaciones Azucareras

Publicados bajo los Auspicios de la Sociedad Internacional de Tecnólogos Azucareros de Caña por Arreglo Especial con SUGAR y AZUCAR—Dr. O. W. Willcox, Redactor Técnico

Agronomía

Deterioro de la Caña de Azúcar Entre el Corte y la Molienda

L. F. MARTIN, *Sugar Journal*, Vol. 19, No. 11, pág. 22 (1957).

En Louisiana, la caña de azúcar recogida a máquina tiene que ser dejada apilada en hiladas en el cañaveral más tiempo que la cortada a mano a fin de poder quemarle las hojas. Esta práctica prolonga el lapso entre el corte y la molienda, lo que implica una pérdida de azúcar mucho mayor que la que se suponía hasta ahora. La magnitud de esta pérdida fué determinada, tomando muestras de dos toneladas de caña apilada en el cañaveral y entregándola a intervalos sucesivamente más largos a un molino experimental, donde fué molida y el jugo fué analizado; las muestras fueron tomadas a los 2, 3, 7 y 11 días después del corte.

Los resultados de este experimento demostraron que 25 toneladas de caña (el rendimiento promedio de un acre en Louisiana) tendrían un valor de $166 si fuesen molidas dentro de 24 horas después del corte; si se moliese al cabo de tres días, sólo valdría $148; si no se moliesen hasta el séptimo día, su valor bajaría a $120; y al cabo de once días, su valor bajaría a $116. Estas son pérdidas que afectan al agricultor directamente. La fábrica que maneja cañas deterioradas también sufre pérdida, ya que resulta más difícil moler y beneficiar cañas de esta naturaleza eficientemente y porque la fábrica rara vez obtiene un rendimiento en azúcar compatible con lo que paga por la caña. El problema de la fábrica se hace todavía más difícil si el rendimento en azúcar por acre es menor de 150 libras de azúcar por tonelada de caña debido a los costos de operación más elevados y a las campañas de molienda de mayor duración.

(Parece que estas dificultades podrían ser evitadas o aminoradas en gran parte usando recolectoras mecánicas modernas que cortan y deshojan la caña; otro recurso sería instalar plantas de limpieza para la caña, como se hizo en Hawaii; el costo del trabajo de limpieza indudablemente sería menor que las pérdidas ocasionadas por las demoras en la molienda.—Editor).

■

Colchón de Hojarasca Húmedo Aminora la Pérdida de Peso y Sacarosa en la Caña Durante el Acarreo por Carreta

K. L. KHANNA Y ASOCIADOS, *Indian Sugar*, Vol. 6, No. 10, págs. 617-624 (1957).

Los trabajos llevados a cabo anteriormente en la Estación Central de Estudios de Caña de Azúcar demostraron que las fuertes pérdidas de sacarosa que ocurren en el intervalo entre el corte y molienda de la caña pueden ser aminoradas considerablemente asperjando con agua la caña cargada en vagones de ferrocarrill. Este método ha resuelto el problema en gran parte en lo que al transporte por ferrocarrill se refiere y lo están adoptando cada día mayor número de centrales azucareros en el estado de Bihar. Hasta hace poco, esta práctica no se podía aplicar al transporte de caña por carreta por falta de un mótodo que pudiese ser empleado por pequeños agricultores. Este problema fué resuelto, cubriendo la caña cargada en carretas con un colchón de hojarasca húmedo.

Después de cargarla en las carretas, la caña se asperja con diez o más cubos de agua. Luego se tapa con un colchón de hojorasca de unas seis pulgadas de espesor que cuelga por los lados hasta la cama del vehículo, el cual también se arperja con agua. En casos donde las entregas se demoran demasiado, el colchón de hojarasca debe asperjarse dos veces al día para contrarrestar la evaporación.

Este nuevo método fué probado en carretas cargadas de caña de la misma variedad y del mismo cañaveral. La caña en un grupo de carretas se conservó húmeda siguiendo la práctica descrita, mientras que la caña en el segundo grupo de carretas no recibió agua alguna. Ambos grupos de carretas se dejaron al sol durante tres días. En ambos casos se determinó el Brix y pureza y el contenido de sacarosa y glucosa en la caña, y el análisis se repitió en tres muestras de caña tomadas de los dos grupos de carretas a intervalos de 24, 48 y 72 horas.

Los resultados de estos ensayos demostraron que el colchón de hojarasca húmedo tiende a conservar la sacarosa en la caña. Se observó que la pérdida en rendimiento de azúcar en cañas no asperjadas, al cabo de 24 a 72 horas, osciló entre 2, 6 y 4.7 unidades, mientras que en las cañas asperjadas osciló entre 0.8 y 1.4 unidades. La caña no asperjada también sufrió pérdida de peso al secarse, lo cual representa una pérdida directa para el agricultor. Por otra parte, la fábrica no sufre pérdida alguna al aceptar cañas asperjadas, ya que ello solamente conserva el peso, pero no lo aumenta; el agua agregada apenas afecta el peso en la báscula.

■

Efecto de la Posición de las Yemas Sobre la Germinación de la Caña de Azúcar

K. N. S. GAHLOT, *Indian Sugar*, Vol. 6, No. 9, pág. 563 (1956).

La germinación de los trozos de caña de semilla es afectado por varias circunstancias, encontrándose entre ellas la posición de las yemas al depositar la semilla en el surco. Esto fué demostrado en un experimento, en el que se relacionó la germinación de una, dos y tres yemas con su orientación en el surco. Los resultados se consignan en la Tabla I. En el caso de trozos de una sola yema (Ejemplo A), vemos que cuando la yema quedó 'cara arriba' (1) se logró una germinación de 70.2%, con la yema 'hacia un lado' (2) 64.5%, y con la yema 'cara abajo' (3) 50.3%, respectivamente. Estas diferencias se deben a la mayor distancia que los brotes tienen que recorrer desde su posición 'hacia un lado' o 'cara abajo' hasta salir a flor de tierra. Además, los brotes que nacen 'al lado' o 'debajo' encuentran mayor resistencial al doblar hacia arriba, por lo cual, algunos de ellos mueren durante este período, lo que reduce el por ciento de germinación. En el caso de trozos de dos yemas (Ejemplo B), no se observó diferencia entre la posición de una yema 'cara arriba' y la otra 'cara abajo' (1) y la posición de ambas yemas 'hacia los lados' (2), ya que la baja germinación de las yemas 'cara abajo' fué compensada por la alta germinación de las yemas 'cara arriba'. En el caso de trozos de tres

(Sigue en la página 61)

Aumente la eficacia de la refinación con estos productos J-M que reducen los costos

Respaldados por casi un siglo de investigaciones, perfeccionamientos y técnica manufacturera, los productos Johns-Manville han adquirido un prestigio envidiable por los servicios prestados a la industria . . . servicios que han contribuído a fabricar mejores productos por un costo menor.

En la industria azucarera, los materiales Johns-Manville han sido factor en la reducción de costos de producción y mantenimiento, así como en el mejoramiento de la claridad del producto. Para informarse acerca de estos productos de alta calidad, escriba a Johns-Manville International Corporation, Box 60, New York 16, N. Y., EE.UU.

Controle el movimiento con . . .

los Materiales de Fricción, que incluyen forros de freno y revestimientos de embrague para toda clase de equipo industrial: hay de tipo flexible, semiflexible y rígido; en estructuras en bloque, moldeadas o entretejidas. Todos poseen las características requeridas para servicio durable: fuerza mecánica, resistencia al calor y a los golpes, durabilidad, fricción muy estable.

Obtenga mayor claridad con . . .

los Polvos de Filtrar Celite®, afamados en la industria azucarera por su capacidad para eliminar las impurezas en suspensión de una solución, y dar filtraciones de brillante claridad sin sacrificar la rapidez del flujo. Los polvos Celite están sometidos a cuidadoso procedimiento, vienen de los más puros depósitos de sílice diatomácea. Hay 9 grados de finura, para eliminar impurezas de tamaño y tipo determinados.

Logre obturaciones más herméticas con . . .

las Empaquetaduras, todas disponibles en los conocidos rollos, en espiral, en lámina, anillos, juntas e innumerables tipos especiales. Se hacen de materiales cuidadosamente seleccionados, muchos de ellos con amianto. Determinadas empaquetaduras tienen por objeto resistir la acción del vapor, aire, aceites, agua caliente y fría, jugo crudo de caña, jarabes, melaza, cáusticos, ácidos y otras substancias químicas.

Otros productos J-M muy usados en la industria azucarera son:
Aislamientos para diversas temperaturas; Tubería de irrigación Transite®;
y productos refractarios.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville PRODUCTOS para la INDUSTRIA

Las Cuchillas Fulton Giratorias de Servicio Pesado preparan la caña perfectamente para moliendas más eficientes, lo que aumenta el coeficiente de extracción y reduce los costos por tonelada de caña molida.

Instale Cuchillas FULTON Giratorias en su conductor de caña, las cuales están diseñadas para ser instaladas y conservadas en servicio a un costo módico, y se adaptan para ser movidas por motor eléctrico, por turbina a vapor o por correa en V.

DIRÍJASE AL INGENIERO REPRESENTAN DE LA FULTON EN SU COMARCA O ESCRÍBANOS

FULTON

IRON WORKS COMPANY • ST. LOUIS 10, MO., U.S.A.

PARA MAYOR LUCRO POR TONELADA DE CAÑA LA RESPUESTA SIEMPRE ES

FULTON IRON WORKS CO. 1857 1957 105 YEARS FULTON ST. LOUIS, MO., U.S.A.

TRAPICHES COMPLETOS • ENGRANAJES
DESMENUZADORAS • PIEZAS

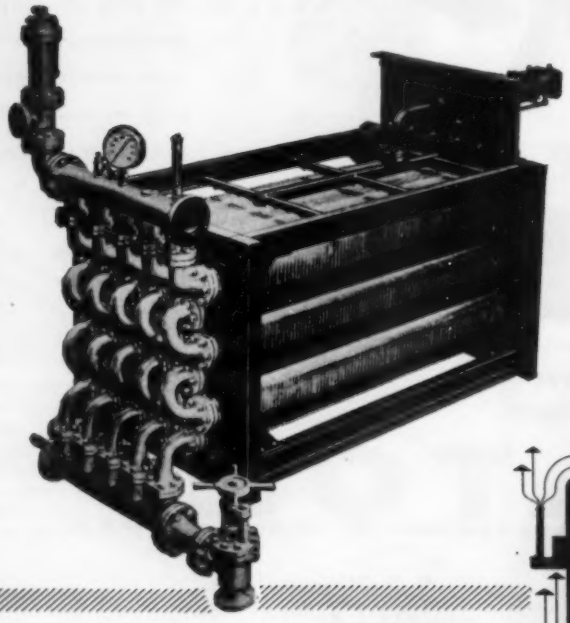
3 RAZONES por las qué la *Industria Azucarera* prefiere la ST. MARY IRON WORKS

- **INGENIERIA:** La St. Mary Iron Works cuenta con un cuerpo de ingenieros expertos, listos para prestarle su valiosa ayuda en cualquier proyecto de construcción o expansión.
- **DISEÑO:** Las plantas diseñadas por la St. Mary aprovechan al máximo el espacio y equipo disponibles—y requieren el mínimo de conservación.
- **FABRICACION:** Las plantas proyectadas y diseñadas por la St. Mary Iron Works son construídas en el plazo prometido.

En cualquier proyecto de construcción o renovación, usted saldrá mejor aprovechando las facilidades y servicio técnico de la St. Mary. Antes de iniciar cualquier trabajo de construcción o expansión de sus facilidades actuales, diríjase a la St. Mary Iron Works por escrito o por telégrafo en solicitud de datos completos.

ST. MARY IRON WORKS Franklin, Louisiana

Steel Fabricators for Half A Century



¿Usa usted combustible complementario?

Si tiene que usar combustible complementario, ¿por qué no sigue el ejemplo de tantas otras fábricas de azúcar? . . . e instale un ECONOMIZADOR GREEN.

Transfiriendo al agua de alimentación de las calderas gran parte del calor que ahora se pierde en los gases de combustión, usted podrá reducir el consumo de combustible, lo que a la vez le permitirá eliminar el uso de combustible complementario por completo. Escríbanos en solicitud de más información.

GREEN'S ECONOMISER

E. GREEN & SON LTD., WAKEFIELD, INGLATERRA

Fabricantes de Economizadores Durante Más de Un Siglo

(Viene de la página 57)
yemas (Ejemplo C), la germinación en la posición (1) y (3) fué prácticamente igual y más alta que en la posición (2), donde una yema quedó 'cara arriba' y dos 'cara abajo'.

Tabla I

Germinación de Caña de Semilla con Relación a la Posición de las Yemas en el Surco.

Ejemplo o Ensayo	*Por Ciento de Germinación*
A. Trozos de una yema	
(1) Yema 'cara arriba'	70.2
(2) Yema 'hacia un lado'	64.5
(3) Yema 'cara abajo'	50.3
B. Trozos de dos yemas	
(1) Una yema 'cara arriba' y otra 'cara abajo'	62.3
(2) Ambas yemas 'al lado'	62.4
C. Trozos de tres yemas	
(1) Dos yemas 'cara arriba' y otra 'cara abajo'	54.6
(2) Una yema 'cara arriba' y dos 'cara abajo'	46.8
(3) Las tres yemas 'al lado'	55.3
	S.E. 3.15

Tecnología

Sistema Teleférico para Manejar la Caña de Azúcar en la Fábrica

ANON., *Industria Azucarera*, Vol. 60, No. 759, págs. 5, 7 (1957).

Dos fábricas de azúcar en Tucumán (Argentina) acostumbraban moler 1,700 toneladas de caña diarias (inclusive el domingo) en tanto que los agricultores hacían sus entregas solamente los días laborables. Para acumular una reserva de caña para los domingos, se empleaba una grúa fija de poco alcance, la que tomaba una sexta parte de las entregas de caña diarias y la amontonaba en un punto determinado. Esta práctica fué substituída en ambas fábricas por un sistema de dos transbordadores teleféricos montados en monrrieles de 200 metros de largo a 5 metros de distancia uno del otro. Un transbordador maneja pequeñas partidas de caña entregadas por carretas y el otro partidas mayores entregadas por camión. En ambos casos, la caña recibida en la fábrica es vaciada en eslingas de cadena para formar atados de unas tres toneladas cada uno. Estas eslingas son levantadas por una cadena en la que van suspendidas balanzas Bianchetti automáticas provistas de cuadrantes que indican el peso de la caña, y son descargadas en un transportador auxiliar que las lleva hasta el tren de molienda.

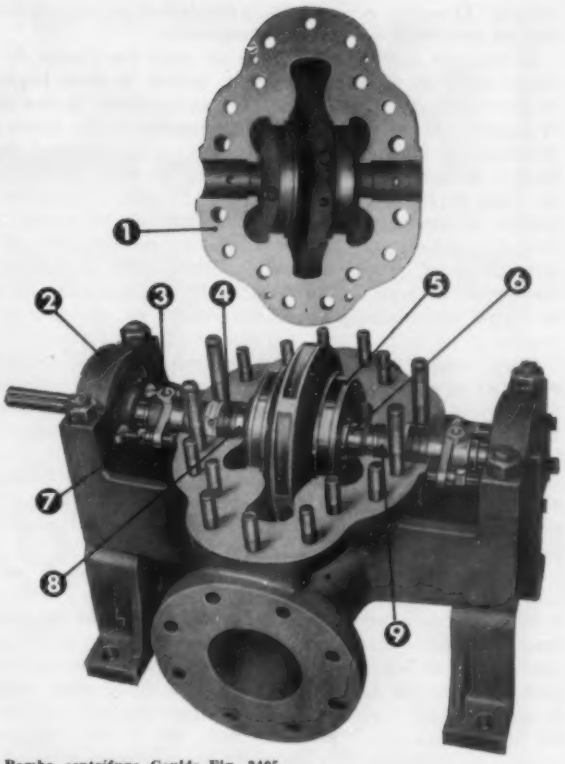
Este sistema alivió en gran parte la congestión en el patio o punto de entrega, donde los agricultores a menudo tenían que esperar su turno. El ahorro en tiempo fué tal que los agricultores pudieron entregar doble cantidad de caña los sábados, la mitad de la cual fué transferida hasta los molinos, como de costumbre, y la otra mitad fué despoitada en una pila baja y larga debajo de los transbordadores teleféricos para que los trapiches pudiesen moler cañas relativamente frescas los domingos. Que se sepa, esta es la primera instalación de este sistema para el manejo de la caña en fábricas de azúcar.

■

Zumbido de los Molinos

B. N. PUNDEY, *Indian Sugar*, Vol. 6, No. 10, pág. 638 (1957).

El zumbido (groaning) de los molinos de caña es un punto discutible, pero se ha hablado poco de la causa. Algunos lo consideran como indicación de que el tándem está haciendo buen



Bomba centrífuga Goulds Fig. 3405 de etapa única y doble aspiración.

Usted obtiene estos 9 detalles de construcción a precios de bombas ordinarias

1. Usted puede examinar, limpiar y sacar todo el elemento giratorio sin perturbar el entubado ni el alineamiento de la bomba ni del impulsor.

2. Ni la humedad ni el polvo se pueden introducir en el envolvente hermético de los cojinetes.

3. Con estos collarines tipo de sombrerete, usted puede usar líquidos enfriadores.

4. La empaquetadura del prensaestopas está formada a troquel.

5. Las chavetas del impulsor son de acero inoxidable.

6. El ingenioso cierre de los manguitos del eje permite cambiar de rotación en la planta sin piezas adicionales.

7. Los pernos de los collarines son resistentes a la corrosión.

8. Anillas de cierre hidráulico hechas de Teflon.

9. Bujes de prensaestopas (sumamente prácticos) renovables.

Solamente la bomba Goulds Fig. 3405 ofrece todos estos detalles reductores de costos sin cargo adicional.

Disponible en 33 tamaños para 200 hasta 6400 g.p.m., alturas hasta 425 pies, de etapa única y doble aspiración. Piezas intercambiables que le permiten reducir su existencia de repuestos el 50% o más.

El Boletín 721.6 contiene datos de funcionamiento. Solicítelo.

MEMBER

Goulds PUMPS INC. Seneca Falls New York

Colombia: Barranquilla: J. Ernesto von Gunten, Ing. Bogota: Luis Wiesner, Ing. Cali: Tecnica Cali, Ltda. Medellin: Tecnica Medellin, Ltda.
Cuba: Habana: Woodward, Gilbert y Cia.
Dominican Rep.: Importadora Tropical, C. por A.
Ecuador: Guayaquil and Quito: Casa Comercial Schwarz, S. A.
Mexico: Mexico, D.F.: Equipos Azucareros, S. A. Monterrey, N. L.: Maquinaria Diesel, S. A.
Peru: Lima: Neisser & Cia., S. A.
Puerto Rico: Santurce, C.E.A.: Industrial Supply Co.
Venezuela: Caracas and Maracaibo: Drew-Bear & Sons, S. A.

trabajo. El sonido es agradable, y obedece a un ciclo de variación en intensidad de unos cinco segundos.

El zumbido depende de la relación entre los ajustes de las mazas delantera y trasera, y ocurre cuando la maza bagacera se cierra más de cierto punto. Hay una relación óptima entre el espesor del colchón de bagazo y la abertura de las mazas que determina la velocidad del jugo relativa a la velocidad de la fibra, y se llama la relación de Egerton, que debe ser alrededor de seis. Si se excede la relación de Egerton, el zumbido es intenso. Como la mayor cantidad de jugo sale del primer molino, el zumbido más intenso ocurre en este molino. Si el zumbido en el último molino es intenso, ello se debe a la readsorción de jugo y a una relación de Egerton muy alta que no puede ser compensada, lo que resulta en alto pol en el bagazo.

Otros estiman que el zumbido es indeseable, y este punto de vista está sustentado por observaciones prácticas y explicaciones teóricas. Se ha indicado que el zumbido de los molinos está íntimamente relacionado con el ajuste de la placa o cuchilla bagacera. El zumbido puede ser causado por: (1) ajuste demasiado bajo de la placa bagacera; (2) ajuste demasiado alto de la placa bagacera; (3) ajuste demasiado plano de la placa bagacera; (4) demasiada carga o alimentación de los molinos.

Invariablemente, el zumbido de un molino es causado por el canto o punta de la placa bagacera demasiado baja o arrimada a la maza de entrada. Esto ocasiona desgaste en las mazas superior y bagaceras así como en la placa bagacera, debido a la acumulación de bagazo dentro del molino hasta que es empujado hacia adelante por la alimentación forzada de la maza cañera, lo que da lugar a altas presiones intermitentes y al desliz en las mazas bagaceras. El ajuste bajo de la placa bagacera también causa mayor vibración en el equipo debido a la irregularidad de descarga del bagazo y a la acumulación de jugo entre la placa y la maza bagaceras. Además, si hay demasiado espacio o abertura entre la placa bagacera y la maza superior, la caña tiende a arrollarse en montones, de modo que cuando la maza superior agarra estos montones, hace saltar el ariete hidráulico.

Los ajustes de las placas bagaceras demasiado altos reducen la eficiencia de molienda; la carga del ariete hidráulico recae en las cuchillas y no en las mazas, lo que produce fuerte desgaste en las placas bagaceras, profundo zumbido, y aumenta el consumo de fuerza. Debido a este frotamiento en la placa, se forman corrugaciones, y si estas corrugaciones divergen en la parte trasera de la placa, el molino se atascará, recibirá menos maceración, y el zumbido será fuerte. Por lo tanto, es necesario que las corrugaciones en la placa correspondan con el ranurado de la maza superior.

Aun aquellos ingenieros que consideran el zumbido en el primer molino como una indicación de buen trabajo, puesto que indica que está rompiendo las células de la caña, están de acuerdo en que no puede ser tomado como un sonido deseable en los demás molinos.

■

Reducción Eficaz del Contenido de Ceniza en Azúcar Refino

J. M. LOPEZ-ONA, JR., *Memoria*, Asociación de Técnicos Azucareros de Cuba (1956).

En la refinería anexa a una fábrica de azúcar de caña en Cuba, el contenido promedio de ceniza en el azúcar refino oscilaba entre 0.03 y 0.05%. La caña beneficiada en esta fábrica es cultivada en tierras de regadío y abonadas. El proceso de refinación empleado hasta el año de 1954 consistía en tratar el licor con Sucro-Blanc y cal en dos etapas, agregando una pequeña cantidad de carbón vegetal en el segundo tratamiento. Durante la campaña de 1955 se introdujeron ciertas modificaciones en este sistema, como en el pH de los licores, en la cantidad de fosfato aplicado, en la temperatura de defecación, etc., en la esperanza de poder reducir el contenido de ceniza en el azúcar refino. Los primeros resultados en este sentido se obtuvieron cambiando el tratamiento con Sucro-Blanc, carbón y cal al sistema de Sucro-Blanc y soda cáustica, donde la soda se usa para alcalizar los derretidos de azúcar afinado. Esto redujo el contenido de ceniza en el azúcar refino a 0.035%. Luego, el sistema se cambió a carbón y soda, descartando el Sucro-Blanc, con lo cual se redujo la ceniza en el azúcar a 0.024%. Esto indicó que la ceniza provenía de las sales alcalinas. Por último, después de un estudio de laboratorio de varias proporciones de otros factores como fosfato de cal, soda cáustica y carbón (los únicos factores activos usados), la ceniza fué reducida a 0.006%, cuyo valor se mantuvo durante toda la campaña de 1956.

Los resultados de esta experiencia en la refinería citada sugirieron que esta idea también se podría aplicar a la clarificación del jugo a fin de reducir el contenido de ceniza en el azúcar crudo. De modo que el jugo crudo fué alcalizado en frío, como de costumbre, a un pH de 7.2 a 7.4, y la alcalización (también en frío) se completó en otro tanque con suficiente soda cáustica para obtener un pH de clarificación final de 6.9 a 7.2. El costo del tratamiento con soda es unos dos centavos por saco de 325 lbs. Antes de la alcalización, el jugo contenía 600 p.p.m. de carbonato de cal; la alcalización con cal se hizo a razón de 320 p.p.m., y con soda cáustica a razón de 200 p.p.m.

Busque esta marca . . . USS . . . su guía para acero de calidad

PRODUCTOS USS PARA LA INDUSTRIA AZUCARERA

TUBERIA "NATIONAL" • TUBOS DE CALDERA "NATIONAL" SIN COSTURA • ACEROS AL COBRE • CERCAS "CYCLONE" • CABLE DE ALAMBRE
ACERO ESTRUCTURAL PREFABRICADO • LAMINAS "APOLLO" GALVANIZADAS • ACERO INOXIDABLE • ACEROS DE ALTA RESISTENCIA
ACEROS "CARILLOY" • PLANCHAS "MULTIGRIP" PARA PISOS • CEMENTO "ATLAS LUMNITE" • SULFATO DE AMONIO

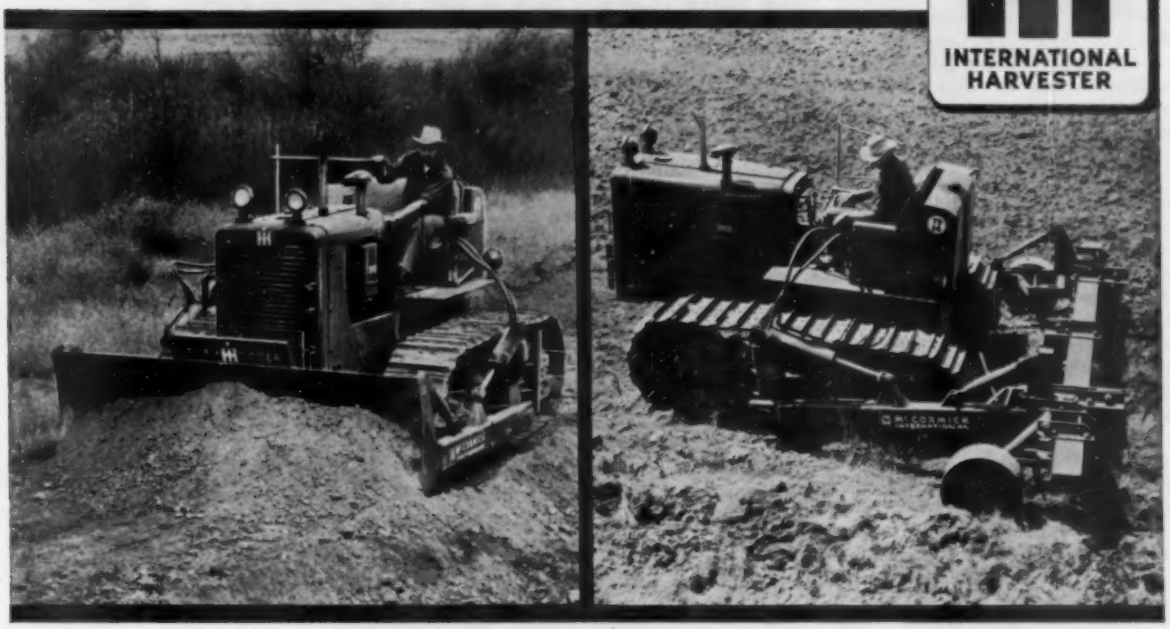
UNITED STATES STEEL EXPORT COMPANY
30 CHURCH STREET, NUEVA YORK 8, E. U. A.
SERVIMOS AL MUNDO

Dirección Cablegráfica "STEELMAKER" New York

NIVELADORA AGRICOLA Y BARRA DE IMPLEMENTOS

McCormick International

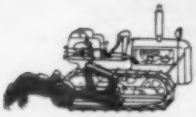
para Tractores de Carriles Diesel International TD-6, 9, 14 y 18



NIVELACIONES AGRÍCOLAS A BAJO COSTO...LABRANZA ILIMITADA CON BARRA DE TIRO...TODO CON UN SOLO SOPORTE BÁSICO!

intercambiables

en sólo unos



cuantos minutos

He aquí un soporte combinado de propósito múltiple para implementos de labranza y una niveladora agrícola, que mantiene ocupados a ambos extremos de su tractor de carriles. Los resistentes aguilones laterales, de funcionamiento hidráulico y regulados por el tractorista, actúan como brazos de tiro para la barra de herramientas y como barras de empuje para la niveladora agrícola.

Puede usted escoger entre una amplia variedad de accesorios para cualquier tarea: zanjear, nivelar, desmontar maleza, mover tierra, desfondar, arar el subsuelo, acolchar rastrojos, aporcar, surcar, cultivar y formar sementeras.

Vea pronto al distribuidor IH locale. International Harvester Export Company, 180 N. Michigan Ave., Chicago 1, Ill., E.U.A.

INTERNATIONAL HARVESTER

He aquí tres de los muchos implementos disponibles (1) Accesorio de aporcadores y sostenes rígidos. Le permite desfondar a gran profundidad para airear la tierra y almacenar humedad. (2) Barra de herramientas con dos accesorios de discos para formar sementeras. Hay disponibles barras de diversos largos para regular el ancho de las sementeras y el espacio entre ellas. (3) Accesorio de sostenes rígidos y de resorte. Los sostenes rígidos cultivan a una profundidad de 33 a 36 cms. Los sostenes de resorte cultivan a una profundidad intermedia.

Informe Anual del Consejo Internacional Azucarero

El informe anual del Consejo Internacional Azucarero amparando las actividades de esta organización durante el año civil de 1956 detalla el trabajo de las sesiones 7ª, 8ª, especial, 9ª y 10ª, respectivamente. El 1° de diciembre de 1955, el Consejo aprovó un cálculo de las necesidades del mercado libre para el tercer año de cuota (1956) ascendente a 4,820,000 toneladas métricas, y fijó cuotas de exportación ascendentes a 3,996,-000 toneladas métricas. El precio en plaza era entonces 3.13 centavos la libra. En su reunión a fines del mes julio, el Consejo elevó el monto de las cuotas de exportación a 4,440,000 toneladas métricas. Entonces, el precio en plaza era 3.41 centavos la libra. El 3 de octubre, con el precio en plaza a 3.25 centavos la libra, las cuotas de exportación fueron reducidas 2%, a 4,369,100 toneladas métricas. El 1° de noviembre se ordenó otra reducción hasta 4,351,376 toneladas métricas. El 8 de noviembre, los precios comenzaron a ascender continuamente, llegando a 5.00 centavos el 28 de noviembre. El 14 de diciembre, el Consejo—ante la mejora en las condiciones del mercado—acordó que las cuotas de exportación podían ser aumentadas 5%, a 4,573,375 toneladas métricas. (En un informe anexo, el Consejo ofrece un detalle completo de los ajustes de cuotas y oscilación de los precios).

En su 6ª sesión, el Consejo había acordado celebrar una conferencia internacional bajo los auspicios de las Naciones Unidas, a la que serían invitados todos los gobiernos interesados y en la cual podría ser reexaminada la operación del convenio y se podrían estudiar todas las propuestas de enmienda. Por consiguiente, el Secretario General de las Naciones Unidos convocó a los interesados a una Conferencia Internacional Azucarera en Nueva York el 21 de mayo, la que fué levantada el 20 de junio. Esta Conferencia fué abierta nuevamente en Ginebra el 4 de octubre y concluída el 2 de noviembre. El convenio fué enmendado por un protocolo que acompaña al informe anual como anexo. En cuanto a 1957, el Consejo, en su reunión del 14 de diciembre, fijó las cuotas iniciales de exportación en 4,573,375 toneladas métricas para el año, y estableció una reserva de 20,000 toneladas métricas para hacer frente a cualquier caso probado especialmente gravoso.

■

Nuevos Productos Sucroquímicos

De acuerdo con un informe de Pfanstiehl Laboratories, Inc., se han obtenido reactivos o agentes "quelatos" sumamente eficaces y económicos partiendo de ciertos ácidos polihidróxidos derivados del azúcar. Estos productos, que se les ha dado el nombre de "seqlenes", tienen la propiedad de ocluir o aislar ciertos iones metálicos como el hierro y el calcio, y de impedir que se precipiten como sedimento.

Estos productos se pueden usar extensamente para suavizar agua, lavar botellas, remover pintura, limpiar metales y remover la herrumbre, chapeado eléctrico, aumentar la acción germicida de anticépticos, elaboración de tejidos, refinación de grasas, y en la fabricación de papel. Para satisfacer este mercado potencial, los Laboratorios Pfanstiehl están ampliando sus facilidades fabriles.

■

Concesión de Licencias para la Fabricación de Ésteres de Azúcar

La Sugar Research Foundation, Inc., anunció hoy (Junio 14, 1957) que se habían firmado tres concesiones de licencia para la fabricación de ésteres de azúcar con la firma de Ledoga, S. por A., una empresa italiana, y dos de sus subsidiarias. Estas concesiones amparan los derechos de fabricación en Italia por Ledoga, en Argentina por Noetinger Lepeti, S. A., y en el Brasil por Laboratorios Lepetit, S. A.

El Dr. Henry B. Hass, presidente de la Sugar Research Foundation, y tenedor de los derechos de patente sobre el proceso de fabricación empleado en la producción de ésteres de azúcar en los tres países, dijo que a la fecha se habían autorizado 11 empresas para producir ésteres de azúcar; tres en los Estados Unidos, tres en Francia, una en Dinamarca y una en Cuba, más las tres nuevas concesiones anunciadas hoy.

Los ésteres de azúcar se componen de una molécula de azúcar y una molécula de grasa unidas. Los ésteres son especialmente útiles en la elaboración de detergentes, emulsificantes y pesticidas. Debido al costo relativamente bajo de los materiales básicos—azúcar y un ácido graso derivado de una grasa como el sebo—los ésteres, cuando se fabrican en gran escala, se pueden vender a precios considerablemente más bajos que los de otros materiales para el mismo fin.

COMPRESORES — BOMBAS AL VACIO
1902 AMERICAN 1956
Lo Mejor en Reconstrucciones

137 PCM 100 LPC 7 x 7 Ingersoll ESI
173 PCM 100 LPC 9 x 9 Ingersoll ESI
184 CFM 135 PSI 8 x 9 Ingersoll ES
283 PCM 35 LPC 10 x 7 Ingersoll ESI
320 CFM 125 PSI 10 x 11 Worthington HB
354 PCM Vacio 14 x 5 Ingersoll ER
360 PCM Vacio 14 x 8 Oliver
364 PCM Vacio 14 x 6 Ingersoll ER
434 PCM Vacio 14 x 7 Worthington HB
437 CFM 40 PSI 12 x 9 Ingersoll-(New)
464 PCM 100 PSI 12 x 11 Ingersoll ES
589 CFM 100 PSI 15-9¼ x 12 Ing. XRE
100 HP SYN 3-60-4160
868 CFM 100 PSI 17-10 x 12 CP-OCB
622 CFM Vacuum 18 x 6 Ingersoll ER
1085 CFM Vacuum 21 x 9 Worthington
1270 CFM 40 PSI 19 x 13 Ingersoll ESI
1385 CFM 125 PSI 13-8 x 7-WN114
Sullivan (Joy) 200 HP 3-60-550

Portátiles
30 PCM a 600 PCM—Gas—Diesel

American Air Compressor Corp.
48th & "S" Streets, North Bergen, New Jersey, E.U.A.

ADVERTISERS' INDEX

August 1957

Allis-Chalmers Manufacturing Co. 37
American Air Compressor Corp. 64

Bellingham & Stanley, Ltd. 39
Bethlehem Steel Export Corp. 50
Brill Equipment Company 38
Broadbent & Sons, Ltd., Thomas 8, 40
Buttner-Werke 10

Combustion Engineering, Inc. 4

Darco Dept., Atlas Powder Co. 17, 56
Diamond Alkali Company 51
Dicalite Div.,
Great Lakes Carbon Corp. . . 49, Cover IV
Dorr-Oliver, Inc. . . . . 1, Cover III

Fives-Lille, Compagnie de 15, 52
Fletcher & Co., Ltd., George 31
Folso & Son, Engrs., Walter J. 38
Four Wheel Drive Auto Co., The 3
Fulton Iron Works 59

Gelb & Sons, R. 38
General American Transportation Corp. . . 11
Goodyear International Corp. 47
Goslin-Birmingham Mfg. Co., Inc. 36
Goulds Pumps, Inc. 61
Green & Sons, Ltd., E. 60

Henderson & Co., Ltd., John M. 33

Industrial Filter & Pump Mfg. Co. 54
International Harvester Export Co. 63

Johns-Manville 13, 58

Kent, Percy Bag Co., Inc. 35

Leffingwell, Roy J. 38
Link-Belt Company 9
Lunkenheimer Company, The . . . . Cover II

Metal Textile Corp. 45
Mirrlees Watson Co., Ltd. 18

NORIT 19

Pott, Cassel & Williamson 35
Pye & Co., Ltd., W. G. 14

Reich & Associates, Gustave T. 38
Richardson Scale Company 2
Rose, Inc., E. A. 38

St. Mary Iron Works 60
Smith & Co., Ltd., A. & W. 7
Squier Corp., The 55
Standard Steel Corp. 39
Stein Equipment Company 38
Stork-Werkspoor 16

United States Steel Export Co. 62

Watson Laidlaw & Co., Ltd. 33
Waukesha Motor Company 20
Weaver, Charles 38
Western States Machine Co., The 5
Westinghouse Electric International Co. . . 53
Wolf, Buckau R. 12, 46
Worthington Corp. 6

"Cada 12 Dias Durante 25 Años . . .

un Filtro Oliver Campbell* a la Industria de Azúcar de Caña Mundial . . ."

Durante los últimos 25 años Dorr-Oliver entregó 775 Filtros Oliver-Campbell a la industria de azúcar de caña mundial—o sea un promedio de *uno cada 12 días.*

Hoy día cada Filtro Oliver-Campbell que se construye va garantizado por un cuarto de siglo de experiencia en diseño, ingeniería, manufactura *y funcionamiento,* todo representado por más de *775 aparatos* en toda región productora de azúcar en el mundo.

Un ejemplo típico lo ofrecen los 28 Filtros O-C comprados en 1956 por fábricas de azúcar en Barbados, Cuba, República Dominicana, Ecuador, Hawaii, la India, Mauricio, México, Perú y Puerto Rico—lo que demuestra la continua confianza de la industria en esta experiencia.

*Oliver-Campbell—T. M. Dorr-Oliver Incorporated, Reg. en la Ofic. de Pat. de E. U.

DORR-OLIVER
INCORPORATED
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT
STAMFORD • CONNECTICUT • U.S.A.

ROTARY PRECOAT FILTRATION

Although rotary precoat vacuum (and pressure) filters have become more and more a factor in filtration, there has been no test device available for the systematic study of filtration rates, filteraid requirements and all the other pertinent operating variables in precoat filtration. Test leaf filters have been used, it is true, but the lack of a precisely controllable shaveoff mechanism, among other things, has limited their usefulness and severely restricted the extension of their results to actual plant scale filtration. Full plant scale tests, though often impractical from the standpoint of time and expense involved, have hitherto been the sole method of working out, accurately, all the variables in establishing optimum performance of precoat filters at the lowest cost. Only those who have struggled with such a test can appreciate the tremendous difficulties in this work. Yet the potential savings in improved operations are so great that a solution of the problem has become imperative.

We believe that the newly-developed, laboratory-scale Dicalite Rotary Precoat Filter Test Leaf, described at the June meeting of the American Institute of Chemical Engineers, in Seattle, goes a long way toward such a solution. This device takes its place as a companion to the well-known Dicalite 'Bomb' Filter, developed earlier for studies in pressure filtration, and widely used for research and control in industrial plants, by filter manufacturers, and in the laboratories of industrial and university research groups.

The new Dicalite filter test leaf is already finding application in the determination of most efficient operating procedures for existing rotary precoat filter installations, and in studies to determine the possible advantages in potential applications. If you have problems involving rotary precoat filters, Dicalite field service engineers will be glad to advise with you, and to discuss the application of this new filter test leaf to the solution of these problems. Filter manufacturers' representatives will soon have this new Dicalite test unit to assist them in their work.

Paul W. Leppla, Technical Director

Filtration studies never possible before except on a pilot plant scale are now made quickly, inexpensively and more accurately through a new development of Dicalite research.

This device, a rotary precoat filter test leaf, is the first precise and practical laboratory-scale device available for study of the process variables in rotary precoat filtration. With it, complete tests of all the major variables can be made in a few hours with a few gallons of process liquor. A long series of these tests has demonstrated that the results obtained with the Dicalite Rotary Precoat Filter Test Leaf show close agreement with those subsequently obtained in full-scale plant operation.

Tremendous possibilities are thus opened up to processing people by this latest Dicalite contribution to the advancement of filtration technology.

For further information please write:

Dependable GLC GREAT LAKES Dicalite® DIATOMACEOUS MATERIALS

DICALITE DEPARTMENT, Great Lakes Carbon Corporation, 612 South Flower St., Los Angeles 17